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ABSTRACT

This volume consists of the following ten papers, which were presented at the second Hokan-Yuman Languages Workshop, held at the University of California at San Diego in June 1976: (1) "The Havasupai Writing System," by Rena Crook, Leanne Hinton, and Nancy Stenson; (2) "The Upland Yuman Numeral System," by Martha B. Kendall; (3) "Notes on Walapai Verb Root Structure," by James E. Redden; (4) "Some Processes of Compounding in Walapai," by Akira Y. Yamamoto; (5) "The Determiner in Kiliwa," by Mauricio J. Mixco; (6) "Yuma (Kwtsaan) after 40 Years," by Margaret Langdon; (7) "The Yuman *n- Prefix," by Pamela Munro; (8) "Yuman Language Interrelationships: The Lexical Evidence," by Nancy M. Webb; (9) "The Word for 'Water': The Pomo Evidence," by Robert L. Oswalt; (10) "Switch-Reference in Seri," by Mary B. Moser. (CFM)

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PROCEEDINGS
OF THE
1976 HOKAN-YUMAN LANGUAGES WORKSHOP

James E. Redden, Editor

HELD AT
UNIVERSITY OF CALIFORNIA, SAN DIEGO
JUNE 21–23, 1976

University Museum Studies

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James E. Redden, Editor

Held at

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PREFACE

In 1970 numerous linguists working on Hokan and Yuman languages were invited by Margaret Langdon to attend a conference at the University of California, San Diego. This made it possible for specialist to get to know each other and to learn in detail what each other was doing. The meeting was so successful that participants soon began asking when we would meet again. In 1975 Margaret Langdon invited the Yumanists to a workshop in conjunction with the research being done at the Yuman Languages Archives which she had established with the aid of a National Science Foundation grant. Again, the participants felt that the workshop was so successful that we ought to meet every year if possible. In 1976 another workshop was held at UCSD to which both Hokanists and Yumanists were invited. These proceedings are the result of that workshop. It is now expected that Hokanists and Yumanists will meet every year. The 1977 meeting will be at the University of Utah in Salt Lake City.

The participants of the 1976 Hokan-Yuman Languages Workshop gratefully acknowledge all the work that Sandra Chung and Pamela Munro did in organizing and running the workshop. Thanks are also due to Donald Crook and Susan Norwood for looking after the many details that helped make the workshop run smoothly.

Unfortunately, everyone who presented a paper at the 1976 Hokan-Yuman Languages Workshop was not able to prepare a final version for inclusion in this volume before it went to press. All the papers in this volume were presented in an earlier version at the 1976 workshop except the ones by Langdon and Webb, which were not ready in time for presentation for the workshop. However, since many of the points they contain were discussed at the workshop, they are included here.

The papers are presented according to the groups of languages presented at the workshop. Since there were some last minute changes in the program, I must plead faulty memory if I inadvertently placed some papers in an order different from that of the workshop presentation. The Langdon and Webb papers are included in the appropriate groups.

James E. Redden
Carbondale, May 1977

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LITERACY AND LINGUISTICS:

THE HAVASUPAI WRITING SYSTEM[1]

Rena Crook, Leanne Hinton and Nancy Stenson

Introduction. Linguists have lately been involved to a great extent in the development of practical writing systems for hitherto unwritten languages. As a group, we come well prepared for the task from the point of view of our knowledge of phonetic alphabets and nonwestern languages, but at the same time, we have failings that are also a result of our discipline. We come to the matter of writing systems with a set of biases that have developed as a part of our background. We combine these biases with large pockets of ignorance about the nature of written language in general: research on the sociological, psychological, pragmatic or formal aspects of existing written languages is scanty: most of us have concentrated only on the nature of spoken language in our previous education and research.

Thus those of us who have been involved in the development of practical writing systems for communities who actively utilize an unwritten native language have found that the process of development is full of surprises, some frustrating and some delightful; and that it is in fact a tremendously rich learning experience for the linguist.

Our most important realization must be that our linguistic expertise does not in fact prepare us to develop an ideal writing system for a community. An honest acceptance of this fact necessarily leads us to the acceptance of the even more important fact that members of the community we are working for frequently have a better idea than the linguist of what kind of writing system would be best for the community. The ideal application of these facts is the full-scale teamwork between the linguist and community members during the time the writing system is being developed. This paper is a study of the history of the Havasupai writing system, how teamwork was developed and utilized, and what the characteristics of the ensuing writing system are. It will also show what some of the theoretical and sociolinguistic lessons are that the linguists themselves learned during the development of the system. It will be seen in this paper that

(a) The development of writing systems is necessarily affected by social values to at least as great an extent as values of pragmatics or linguistic economy.

(b) The development of the Havasupai writing system brings to light facts that indicated that the descriptive model of languages adhered to by linguists tends to be conservative: what we set up as "deep structure" in many cases turns out to be an earlier structure, rather than the representation of synchronic psychological reality. While conservative models are useful to linguists, especially in comparative work, these models are not useful to modern native speakers wishing to get on with the business of reading and writing.

(c) While linguists and native speakers alike use as an argument

for the development and dissemination of writing systems the idea that language and cultural traditions can be preserved through it, it may in fact be the case that the demise of active tradition may be hastened by the successful dissemination of a writing system.

The Development of the Havasupai Writing System

The Havasupai Bilingual Education Program was designed to accomplish simultaneously two related goals: to introduce the Havasupai language and culture into a previously all-English school system, and to develop a written language for the benefit of the adult community. The long-term result hoped for from accomplishment of these objectives is the preservation of the language by reestablishing its footing as the primary medium of communication in all aspects of community life.

The Havasupai community consists of approximately 500 tribal members, including about 60-70 children attending school in Supai village, and ranging in age level from preschool to 6th grade. Older children must leave the canyon to attend various boarding schools. Because of its isolation, Havasupai has survived better than most related languages. Havasupai is the first language of virtually all members of the community with the exception of a very few non-Indians or members of other tribes. Though most adults speak English by virtue of having been educated in English-speaking Indian Schools, Havasupai is the language of preference in the home, and children entering school have in fact very little competence in English. Though bilingual aides have been employed in the schools for some years, basic curriculum has always been overwhelmingly English dominated.

A child being taught to read, do arithmetic, and accomplish other basic skills in a language he does not understand will clearly not learn these skills properly, and his subsequent education will be retarded as a result. There is therefore a very pressing need to introduce Havasupai as the medium of instruction in the classroom, especially at the early levels. The philosophy of the program is that the children have a right to learn reading and other skills in their own language while the English language is being taught as a separate subject.[2] To accomplish this goal, materials for teaching reading and other skills through the medium of Havasupai must be made available.

As for the adults, they continue to use Havasupai in their daily life (though the use of English words is becoming more prevalent, both for items not indigenous to the culture and for certain classes of words such as numbers and colors, where existing Havasupai lexical items are being replaced by English ones among younger speakers). The lack of a written language, however, has produced a somewhat schizophrenic linguistic situation for the Havasupai. Though in all his daily oral transactions he may use Havasupai, he must use English for any written transactions. Development of literacy in Havasupai as well as English is expected to redress the balance and return unity to the linguistic situation within the community.

The prerequisite for the accomplishment of both these objectives is of course a written language. Thus in 1974 the Havasupai Tribe applied

for a grant to develop a bilingual education program, where the first priority was to develop a practical orthography which could be used to produce classroom materials, especially for the teaching of reading to schoolchildren, and at the same time be introduced into the adult community.

The Havasupai members of the Havasupai Bilingual Education Program (HBLEP) presently include Rena Crook, the on-site director; Edith Putesoy, the head language advisor; and Webb Jones, language advisor. Leanne Hinton is the linguistic director of the program, being on-site during summers and making monthly trips during the school year; and Nancy Stenson served for the first three months of the program as the on-site linguist, to oversee the training of the Havasupai team members.

As linguists, Hinton and Stenson were guided in their initial choice of symbols by the following criteria:

(a) The alphabet should be unambiguous--it should follow the rule of "one sound, one symbol" that forms the basis of phonetic alphabets;

(b) It should adhere as closely as possible to alphabets developed for other Yuman languages, for the sake of easy transfer and a kind of aesthetic unity.

Both of these considerations meant that the basis of the practical orthography would be the phonetic inventory postulated for Havasupai by Kosiowski (1972):

TABLE 1

vowels:	i		ə			u		
		e		o				
			a				+length	
consonants:	p	t	k	k^w	q	q^w	?	
	v	θ	s	č	h	h^w		
	m		n	n^y				
			l					
			r					
	w		y					

However, the authors were also guided by pragmatic considerations, especially the following:

(c) Since the adult population is literate in English, and children will all become so, the alphabets should be as similar as possible to allow easy learning of both;

(d) It also seemed desirable to produce an alphabet which could be easily reproduced on a standard typewriter.

Criteria (c) and (d) meant that diachritics and other special symbols should be kept to a minimum, and that digraphs of the sort used in

English might be utilized in Havasupai as well where ambiguity was not a problem.

The operation of all four criteria resulted in an initial system as follows:

TABLE II

Vowels:	a	e	i	o	u		
	aa	ee	ii	oo	uu		
Consonants:	p	t	k	kw	q	qw	'
	v	th	s	ch	h	hw	
	m	n		ny			
		l					
		r					
	w		y				

This alphabet was seen by all as a starting point only. It was the goal of the linguists to teach this preliminary system to the Havasupai team members, and then for the team as a whole to spend several months practicing with it, finding the problem areas, and coming up with solutions that would slowly solidify into a finalized system. As a further effort to make certain that the final result was reached by a concensus of native speakers, an adult education class was soon instituted, taught by Rena Crook. This class also worked on the problem areas, and were influential on the final outcome.

Even after the on-site linguist's work was finished, the Havasupai team members continued to make revisions in the alphabet and in the spelling conventions for close to a year. Before discussing the process in detail, we will present the final alphabet here. It will be noted that there are great differences between it and the initial system.

TABLE III

Vowels:	a	e	i	o	u		
	aa	ee	ii	oo	uu		
Consonants:	b	d	g				
	p	t	k	kw	q	qw	'
	f	th	s	ch	h	hw	
	v		j				
	m	n	ñ	ŋ			
		l					
	w		y				

In fact, this alphabet, with the r gone, and with seven new characters added, represents a system closer to the modern phonemic system of the Havasupai language. The original alphabet turns out to represent a conservative system, set up on the basis of phonological and morphophonological rules that appear in retrospect to be more historical than synchronic.

Other criteria for alphabetic development. Not unnaturally, the linguistic criteria (a and b above) for determining the ideal alphabet were not greatly valued by the Havasupai members of the team. The pragmatic criteria invoked by the linguists did represent values shared by the Havasupais; but beyond those, various other criteria were soon to be of importance.

(e) Given that Havasupai sounds that are similar to English sounds should have the same representation in both languages when possible, it was also brought out by the Havasupais that sounds contrasting phonetically with English sounds should have different representations, even if it means the creation of unusual symbols. (See discussion of ɨ an example.)

(f) Social and political criteria turned out to be very powerful in the final determination of the character of the writing system. Having a writing system similar to writing systems of other Yuman languages was given a negative value by the Havasupais. The Havasupais see a writing system not only as a reflection of linguistic differences, but also as a tool to engineer greater similarity or greater contrast between two dialects or languages. They adhere strongly to the notion that language differentiation is a key phenomenon in the maintenance of group boundaries. They wish to maintain strong distinctions between themselves and other tribes, and wish their writing systems to reflect it. Thus if a choice between two symbols of equal pragmatic value were to arise, the Havasupais would choose that symbol which is not espoused in the writing system of a related language. (The discussion of b, d and g is related to this matter.) Furthermore, attempts by Hinton and Stenson to help bring the Hualapai alphabet closer to the Havasupai system were censured by the tribal council, on the basis that the alphabets should be kept distinctive to encourage distinctiveness in the dialects.

The problems relating to the differences between the original writing system and the finalized version will be discussed in the following sections, as will some of the other problems the staff encountered in devising and implementing the spelling system.

Consonant voicing. Table I indicates that Havasupai has the usual Yuman voiceless unaspirated obstruent series, but the alphabet shows an array of both voiced and voiceless stops, as well as voiced/voiceless distinction in a fricative (v, f) and an affricate (j, ch). The dentals, which presented special problems and have a different explanation, are discussed in the next section. For the other obstruents, the alphabet differs from the original phonemic inventory as follows:

TABLE IV

phoneme	letter
p	p, b
k	k, g
k^w	kw, gw
č	ch, j
v	f, v

The letters b, g and j are now used to represent the lenis, voiceless non-continuants that were represented as p, k and č in the original system. In Havasupai, these stops vary between voiceless and voiced. (Kosiowski, personal communication, has noted that this is a stylistic variation, governed by social context: the strongest voicing is found in men rather than women, and mostly in men who are interacting in a tough, male-oriented situation, such as during a rodeo or a drinking session.

Linguists define voicing as the primary difference between the two English stop series, although other differences are also present: the English voiceless stops and affricates could also be defined as fortis, while the voiced stops are lenis (Foley, 1972). It appears that to someone who has not been taught the linguistic point of view the fortis-lenis distinction might hold precedence over the voiceless-voiced distinction. At any rate, the Havasupais, bilingual in Havasupai and English, hold that their non-continuant series is most like the b, g, j of English.

To recapitulate, the Havasupais are bilinguals, faced with a series of stops in Havasupai that are most systematically characterized as [+lenis, -voice], and two series in English that are [+lenis, +voice] and [-lenis, -voice]. They had the choice of deciding whether the distinctive difference between the two English series is voicing or lenition; and they decided in favor of lenition.

If we as linguists wish to match our analyses to a model of psychological reality, factors such as these might force us to rethink our choice of distinctive features in characterizing stops.

The voicing or lenition of stops and affricates is an important difference between Havasupai and the neighboring Pai dialects (Hualapai and Yavapai), and so the sociopolitical considerations cited in (f) were another motivating factor in the choice of b, g, j over p, k, č.

However, in certain words, stops were consistently voiceless, fortis and aspirated, and were perceived as contrasting with those written as voiced stops. There are even some minimal and near-minimal pairs for the two series:

[g^wa] ~ [k^wa] horn
[$k^{w^h}a$] metal

[bu] ~ [pu]	gun
[pʰu]	bow
[ba·] ~ [pa·]	man
[pʰa]	bullet[3]

Other examples of aspirated noncontinuants:

[čʰŭda]	"winter"
[kʰǎya]	"different"
[ʔəfʰŭʔu]	"coyote willow"

A look at earlier forms (Spier, 1924; Whiting, n.d.) shows the historical origin of the aspirated stops to be an hC cluster, which is reduced in most speech to a heavily aspirated single consonant. The cluster can still be heard in the very careful speech of older speakers.

Examples:		
	[pʰu] ~ [hpu]	bow
	[čʰuda] ~ [hčŭda]	winter
	[kʰǎya] ~ [hkaya]	different

It was the Havasupais, not the linguists, who first pointed out the aspirated series and decided to represent it with p, k, and ch.

The younger members of the team and adult education class were not aware of the origin of the aspirated stops, and were not even aware of the older people's alternant pronunciation until the older people and linguists pointed it out. These facts can be seen as good evidence that young Havasupais perceive the aspirated forms as separate phonemes rather than as surface results of phonological rules operating on an hC deep structure.

The fact that the linguists were not the ones to first notice the aspirated series is indicative of the bias toward linguistic conservatism that is built into linguistic analytical theory and method. To begin with, Americanists have tended to work primarily with older native consultants; secondly, linguists seek regularity and simplicity of underlying forms with passion. In the search for regularity, we often lose sight of the distinction between historical and synchronic rules, and end up creating a model that might be more indicative of an earlier model of a language rather than the model operating in a present day language.

Nevertheless, the rules that have been postulated for Havasupai do seem to fit to some extent the model utilized by the oldest members of the tribe, as evidenced by alternant forms. The differences between the language of the older and younger speakers are worthy of a separate study; but one very central difference might be pointed out here: Havasupai language change, as evidenced by the differences between the older and younger speakers, seems to involve a simplification of the system of phonological rules (that is, the actual loss of many phonological rules) and a concommitant complexification of underlying form (such

as the addition of new phonemes). Notable is the loss of variability in the speech of younger Havasupais, an aspect of linguistic change that has been discussed widely in sociolinguistic literature in varying contexts.[4]

Dentals. The orthography appears to be somewhat top-heavy in the dental series: t, ŧ, th, d. The symbol th needs the least comment: it represents the same voiceless interdental fricative as in English.

The symbol ŧ represents an interdental stop [t̪]. At first, on the assumption that Havasupai had only the interdental stop, the linguists tentatively used the letter t for it. From the start, the Havasupai staff members were uneasy about this decision. In contrast to their choice of b/g to represent the unaspirated stops, they felt that the phonetic differences between Havasupai [t̪] and English [tʰ] were too great to justify using any English letter for the Havasupai sound. This uneasiness turned out to be widespread; when an adult education class in reading and writing Havasupai was begun by the bilingual education staff, members of the class unanimously and emphatically rejected the use of t for [t̪] on the grounds that the letter represented some other sound. This was such an emotional issue that interested members of the tribe that were not in the adult education class even brought up the matter in tribal council meetings, asking that the HBLEP team be directed not to use the letter t for the sound. Thus the letter ŧ was invented to use for the interdental stop.

After the decision to use ŧ was made, an aspirated alveolar [tʰ] was found in one word: [tʰa], "reed". This word is pronounced [tʰa] invariably, even by older people, and is also found as [tʰa] in Whiting's notes (based on the language of the old people alive in the '30's). It is nevertheless a reasonable guess that it derives from an older form with an initial [h].[5]

The symbol d is used for the phoneme that is /r/ in other Yuman languages. The preliminary alphabet used r as the letter. But as we began working out the spelling of individual words, it became apparent that the staff's natural inclination was to write a d instead. Gradually it became apparent that the r was unnecessary. In medial position, of course, this sound matches very closely the English intervocalic flap derived from dental stops. Even initially, the Havasupai consonant sounds far closer to English /d/ than Spanish /r/ does. The oldest members of the tribe sometimes (but very rarely) pronounce a rolled or flapped [r], but for the speakers under 60 it seems to have become a full-fledged voiced stop. /r/, then, does not appear to be part of the modern Havasupai phonemic inventory.

Nasals. The nasal series is fairly straightforward, but a couple of comments are in order. The palatal /nʸ/ is quite common, and for some time we vacillated between the spellings ñ and ny. Considerations of ease in typing would dictate the latter, but because ny is such a common English sequence, especially in final position, and has a very different phonetic realization (as in many, funny, etc.), the staff decided to recognize (as was done for ŧ) that Havasupai /nʸ/ is a sound

which does not correspond to any English phoneme, by giving it an orthographic representation that differs from English. The typographical inconvenience of adding a tilde (which is readily available on many typewriters anyway) was felt to be outweighed by the desirability of avoiding potential confusion with the English spelling sequence.

A different sort of problem arises with the velar nasal [ŋ], which is now represented by an n with a dash through it: n̲. This sound is not phonemic for older Havasupais, although the status of [ŋ] is questionable for the younger generation. The sound [ŋ] derives from the sequence /g/+/m/ occurring in verb forms, specifically linking a second-person verb with its following auxiliary.[6] That is, [ŋ] results from assimilation of the "same-subject market" /-g/ with the second-person prefix /m-/:

/ge+m-ya·m-g+m-yu/
where you-go-ss+you-be/ "Where are you going?"

⟶ [gemyǽ·miŋyu']

The linguists were interested in seeing whether Havasupais would wish to write the [ŋ] in some way representing its surface phonetic form, or if they would choose to write the underlying form instead. From the first, the Havasupai team members chose to represent the surface form in the orthography. Related to this is the fact that while older speakers will keep the /g/ and /m/ separate in very slow, careful pronunciation ([gemyámag miyú]), the younger people always use the [ŋ] pronunciation, no matter how carefully they enunciate. Furthermore, when the derivation of [ŋ] from /g+m/ was pointed out to the younger speakers, they were surprised and skeptical until older speakers convinced they by slow enunciation of some examples. All these facts are indications that the rule /g/+/m/→[ŋ] is not productive among the younger Havasupais, and that they see [ŋ] as a phoneme.

The original choice for spelling [ŋ] was ng, which appealed to the linguists for several reasons: it corresponded to English spelling for words such as sing and singer; and it bore some analogy to the derivation of the form, since it still contained a g. However, it became evident that in the Havasupai spelling system as conceived, there were many instances when the spelling sequence ng would be used when the pronunciation of the sequence would be [nag]. (Examples: hanga [hanga] ngo'o [nagǽʔo].) For a while, we tried the convention of writing n-g for these latter sound sequences, but we also found that bilingual adults tended to pronounce the ng sequences as [ŋg] or [nag] when sounding out all words. After practice, the adults could certainly have learned the spelling-pronunciation correspondence, but the Havasupai staff decided it would be considerably simpler to invent a new letter instead. And so n̲ was born.

It is interesting to speculate on what will happen to a sound such as [ŋ], that is present in the language in virtually only one place. This seems like an unstable situation: either [ŋ] should become more general or it should disappear. We vote on the latter possibility, based on the observation that some younger people, while generally using

[ŋ] in careful pronunciation, often use [ñ] in informal speaking. Since /nʸ/ is a common phoneme in Havasupai, it is possible that eventually /ŋ/ will disappear.

Other letters. The other letters in Havasupai are fairly straightforward: ' for [ʔ], aa for [a·], and the corresponding double letters for the other long vowels. One problem came up woth the spelling of diphthongs: for the diphthong [ay] we had the choice of spelling it ai or ay. The team settled on ai to avoid confusion with the [ey] diphthong in English that is commonly spelled ay. Thus:

halgu	"white man"
bagtai	"old man"

However, when the diphthong is followed by another vowel, a [y] is definitely interpreted as being present, as in [báya] "all", [məəgʷáya] "hurry up!" For some time, spellings like mthqwaiya were used, but adding the y to the i of the diphthong seemed redundant and awkward, and the practice was eventually abandoned in favor of a spelling rule changing i to y before a vowel.

Shadow vowels. The notorious question of the phonemic status of the "shadow vowels" (short unstressed reduced vowels generally represented in linguistic descriptions as schwa) in Yuman languages resurfaces as an orthographic problem as well: should shadow vowels be written? And if so, how? The five vowels are already in use and no convenient extra symbol is available. Though the phonetic reality of schwa, especially at morpheme boundaries, is undeniable, it is not really heard as a separate vowel. Its quality varies widely according to the surrounding consonants and, to a lesser extent, the speakers; and its phonetic manisfestations cover most of the vowel spectrum. (See Hinton, 1977, for a thorough discussion.)

We began writing shadow vowels, trying to assign to each occurrence the quality of whichever of the other five vowels it most closely approximated. The results, however, were anything but consistent. Perceptions varied enormously--different people would hear the same word differently, and the same person might spell a word two ways on two different occasions.

Derivational morphology and grammatical inflection are also affected by the shadow-vowel problem. One would like to be able to identify affixes consistently without elaborate rules to account for the presence or absence of a vowel between various affixes. But it is not always possible to do this and continue writing the shadow vowel. The imperative prefix /m-/, for instance, was written quite regularly as mi- in words like miyaama "go!" because the stem-initial palatal conditions a high quality in the vowel. But the same prefix takes different forms before other verbs: me'eva "Listen!", muwah "Sit!", mamah "Eat!" Of course, in this last example, the quality of the shadow vowel in the first syllable is quite different from that of the stressed vowel, even though they are written the same. Finally, before a few stems, only the m- is heard and written: mij "Say!" (Most other vowel-

initial stems take an inserted ?: [mə?ə́va] "Listen!")

Verbal suffixes provide another illustration. The same-subject market after a vowel-final stem is written -g: smaagyu "He is sleeping", gwaawgi "He is talking". But after a stem-final consonant, a shadow vowel appears: swaadigi, or swaadagi, etc. "He is singing". Even if an arbitrary vowel were chosen to go with the suffix, at best two "allographs" would be needed; no consistent spelling rule could be devised to predict their occurrence, because after sonorant consonants the shadow-vowel may or may not be heard, and spelling alternations such as yaamgyu / yaamagyu "He is going" would be inevitable.

Probably the most important problem in writing the shadow vowel is that the stress regularity of the language is damaged by a series of unstressed vowels between suffixes. Since stress is on the final syllable of the stem, only suffixes containing a vowel will affect the pattern of final stress. If suffixes are written with shadow vowels there will be a large number--probably a majority--of words whose stress is unpredictable in the writing system. As an example, consider the following pairs, spelled first as they would be with shadow vowel included, then without:

midig	"beans"	swaadig	"sings"
mdig		swaadg	

In the first spelling, both words end in -ig. In midig, this is the stressed stem vowel, but there is no way in this spelling system to distinguish it from the unstressed -ig suffix of the verb, and the differences in stress between the two words are unpredictable. Eliminating the shadow vowels from the spelling of each word leaves only one choice for stress in each case--the correct one.

A further argument for the elimination of shadow vowels from the spelling system is that phonologically, shadow vowels are generally predictable by rule. (See Hinton, 1977, for a description of Havasupai vowel insertion rules.) Havasupai staff members have no problem reading back words that have been written without the shadow vowels.

So after considerable work with the problem, the Havasupai staff decided to dispense with the writing of shadow vowels. This decision can be said to have turned the writing system into a partially consonantal system like the writing systems for Hebrew and Aramaic. The present spelling system only writes root vowels and vocalic suffixes.

The Havasupai decision to leave out shadow vowels can be seen to have bearing on a problem that has been discussed by Yumanists for a long time: are shadow vowels underlying or inserted vowels? Shaterion (n.d.) postulated that in Yavapai unstressed vowels should be viewed as inserted; Hinton (1977) claimed the same for most (but not all) shadow vowels in Havasupai; and the Havasupai staff went a long way toward clinching the matter by demonstrating the psychological validity of vowel-insertion rules by their decision not to write shadow vowels.[7]

Some cultural implications of new writing systems: A warning. Some major differences between writing cultures and non-writing cultures are as follows:

(a) In non-writing cultures, knowledge is transmitted orally and face to face. Face-to-face oral communication has many facets lacking in written communication; besides the "paralinguistic" parameters of intonation, gesture and facial expression, face-to-face communication can take place in a context that involves objects, dancing, singing, and other nonlinguistic phenomena. Further, oral face-to-face learning usually takes place in the very context where the knowledge is to be applied--at curing ceremonies, at ceremonial dances, during hunting expeditions, etc. Writing has the effect of removing communication from its normal context.

(b) In non-writing cultures, representations of history, religion, law and other institutions change relatively fluidly to fit in with a holistic cognitive schema of reality.[8] In writing cultures, written knowledge has permanence and rigidity; it does not change fluidly.[9]

(c) Related to the above is the implication that people in a non-writing culture, by changing knowledge to suit a holistic view of reality, may maintain stability of this holistic cognitive structure. In writing cultures, where the knowledge itself is stable, the holistic structure may have to be sacrificed.

A major modern argument for the introduction of a writing system into a community has been that it can serve to record and maintain aspects of tradition that might otherwise die out. Writing will record only part of any traditional knowledge--only the linguistic part, which is not necessarily the most important aspect. And it can be argued that it will not generally function to maintain knowledge, and may even hasten the "death" of tradition, (depending on the degree to which systems become important in the transmission of those traditions), in the following ways.

(a) If tradition is transmitted through writing, the paralinguistic and contextual factors will be missing. Writing has not yet become a powerful enough tool in most recently-written languages to play a major role in transmission; but tape-recording has come to play this role in many instances. For example, young Havasupais primarily learn songs from tape recordings now. They learn the songs, but they know nothing about their ceremonial context, their history, their meaning, or their powers to help or harm. As an example from elsewhere, Navajo medicine men generally refuse to allow apprentices to record songs because they deem that the learning of songs from recordings would be meaningless and rote. (John Farella, personal communication.)

(b) The recording of knowledge creates a model that can thenceforth be copied. To extent that people depend on recorded models (whether written or taped), to that extent the knowledge becomes rigid, unchanging.

(c) If the tradition is rigid and unchanging, it may become less and less suited to the world views of the people exposed ot it, and thus more and more likely to be rejected as a meaninful part of their lives.

From this framework, let us examine some of the realized and potential effects of the Havasupai writing system. It will first be noted

that while the Havasupais have had the opportunity to accept or develop a writing system for at least a hundred years, it is only two years ago that they actively began to seek the development of a writing system. There may be many reasons for this: but it can partly be attributed to the developing belief among the Havasupais that tradition should be static. The desire to stop their language from changing and to keep the stories and songs static was an impetus for developing a way of recording them; in turn, the writing system can successfully serve their desire to create a stasis of tradition. At the same time, tape-recording of stories and songs has become popular, also to create stasis.

The HBLEP team members are creating a dictionary that amounts to a kind of language engineering, in that it only allows the entry of "old words"; many words used by young people are purposefully being left out. There are arguments developing over differences in ideolect, with some adhering to the notion that no alternatives in pronunciation, lexicon or syntax are allowable. (Students of language change have argued that the presence of alternatives is the very root of language change. e.g., see Labov, 1972). Havasupais are also using recordings (both written and taped) as models for songs and stories, and some are expressing anxiety over the possibility of relating a song or story differently from a recorded model.

The desire to keep language and tradition static can be seen as a response to various pressures contributing to the erosion of these traditions. But we are suggesting here that the Havasupai systems of recording--both tape and writing--are themselves becoming parts of a feedback system of increasing rigidification of tradition, and disappearance of all non-linguistic context of knowledge, and that this is an actual symptom of erosion itself. The rigidification of traditional knowledge in the face of overall cultural change further helps set up a situation where the knowledge must be rejected as untrue or unuseful.

The Havasupais have pursued the development of a writing system partly because they see the traditions disappearing and wish them to be maintained. But they--and linguists--must realize that writing and taping will serve only to record, not to maintain, those traditions.

Conclusion. The Havasupai Bilingual Education Program is now in its second year. The staff was increased at the beginning of the second year, and at present all full-time staff are native Havasupai speakers, working with only occasional assistance from outside consultants. The staff began working in the classroom from the start of the program, with an oral teaching program, and the number of hours that Havasupai is used in class has been steadily increased. The staff members have produced written materials for use in the classroom, and are now teaching the Havasupai spelling system in the schools as well as in an adult education class in the evenings. A column written in Havasupai appears regularly in the community newspaper, and attempts are being made to translate posters and notices on the community bulletin board into Havasupai. Plans are underway to print reading primers for the teaching of reading through the medium of Havasupai language. Gradually the

written language is finding its way into the community as a medium of written communication.

The alphabet that has resulted from a year or more of cooperative efforts is "imperfect" from a linguistic point of view: it has more symbols than a linguist would like to see, includes digraphs, and looks altogether different from the phonemic system that has been postulated for that language. Furthermore, it is fairly different from the systems being developed for related languages, even mutually intelligible languages--so that a comparison of data in the practical writing systems might lead people to believe that Havasupai is more different from other languages than it actually is.

On the other hand, the alphabet is relatively easy to learn, and easy to type, and fits the bilingual situation of the Havasupais in that it has a fit with the English alphabet where the sounds in the two languages are alike, and utilizes non-English symbols for sounds different from English. It also reflects a more realistic model of the contemporary Havasupai language than the starting model did; and it adequately reflects the Havasupai desire to maintain a strong distinction between themselves and other tribes. In any case, it must be the community who will utilize the writing system that is the final arbiter of its nature and role--not the linguist.

FOOTNOTES

1. The ideas in this paper are the results of input from many sources. As will be seen throughout, the other members of the Havasupai Bilingual Education Team and many members of the Havasupai Tribe must be acknowledged as the authors of many of the ideas discussed here. Also, acknowledgement and thanks are due to Dr. Beverly Crane and Dr. James Bartlett, who recently team taught a course with one of the authors on the impact of writing systems. Many concepts developed as a result of the three-way interchange between the three professors appear throughout this paper.

2. This philosophy is legally supported by the Supreme Court decision of a few years ago which maintains that American children have the right to be educated in the language they know best.

3. Hualapai, there is no length distinction between "man" and "bullet"; it is only a matter of aspiration vs. non-aspiration. Also in Hualapai, the referents for [pʰu] and [pu] are reversed--that is, [pʰu] is "gun" and [pu] "bow".)

4. One particularly relevant study is the study of linguistic diversity in Southwestern Indian languages by Elizabeth A. Brandt (Brandt, 1975), which shows that loss of diversity is by no means a one-way street, but which, in the languages she studied, shows an oscillation between generations, suggesting a notion of cyclicity in language change.

5. In all the Havasupai aspirated forms, conclusive evidence of their origin in an hC form comes from comparative evidence (Wares, 1968). Many other Yuman languages still retain [h] or [x] in the initial position in these words.

Modern Havasupai	Other languages (from Wares, 1968)
[tʰa] (reed)	Mojave ahtǻs; Maricopa xtǻš; Cocopa xcǻs/xcǻ Diegueño ʔextǻ·; Paipal xtǻ
[pʰu] (bow)	Yavapai hupů; Paipal xpů.
etc.	

6. It also occurs in rare onomatopoetic forms, such as [gɾŋagɾŋ], the sound a small bell makes. Otherwise [ŋ] occurs only in vocables in songs.

7. Elimination of shadow vowels results in clusters of two occurrences of the same consonant:

qqot [qəqǻt] "fox"
hwagg [hʷǻgəg] "two"
jjthulgwi [jəjəθůlgwɪ] "they washed it"

There was some resistance to writing these double consonant sequences without an intervening vowel. Presumably under the influence of English double consonant spellings, it was felt that something was needed to insure that the sequence would be interpreted as two separate sounds. Thus the staff employed a spelling rule of writing a - between like consonants: q-qot, hwag-g, j-jthulgwi.

8. An illustration of this principle is made in Goody and Watt, 1962, where the tale of the origin of chiefdoms in Gonja (Northern Ghana) was discussed. The tale once said that the original chief had seven sons, and that he had divided the land among them to form the seven chiefdoms. Sixty year later, however, two of the chiefdoms had been disbanded, so that only five remained. At this time, the tale said that the original chief had had only five sons.

A more general illustration can be found in the Navajo religion, where the horse--introduced by the Spaniards into the New World in the sixteenth century--has taken on a central position in the oral religious tradition to match its centrality in Navajo life.

9. For example, the Bible has lost credence among many, because it makes so many statements that no longer fit with our notions of social or factual reality. Presumably, if our religion were based on oral tradition, the traditions would have changed fluidly over time to avoid the conflict we presently find between our perception of reality and what has been written.

THE UPLAND YUMAN NUMERAL SYSTEM[1]

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0.1 General

The basic morphology for Upland Yuman numerals differs only slightly from dialect to dialect; yet the syntactic constructions in which the morphological items participate are just divergent enough to create difficulties in inter-dialectal communication. Despite the high degree of mutual intelligibility Upland Yuman dialects show, speakers of the Southern dialects may switch to English when talking with speakers of the Northern dialects if the subject of discourse involved numeration.

The Southern or Yavapai dialects have borrowed English words for hundred, /shuna/,[2] and thousand, /θawva/, while the others innovated native-language compounds. This seemingly insignificant datum assumes its proper gravity when these two basic numeral systems are compared syntactically. All numbers in Upland Yuman are verbs, or are derived from verbs, except for Yavapai /shuna/ and /θawva/. As verbs, they exhibit regular verbal morphology, i.e., they may be marked for person of subject, number, mode, tense, aspect, switch reference, and so on, although obviously not all verbal affixes are semantically compatible with the concept number. Now, the words for hundred and thousand are based on the lexical item for ten in the Northern dialects; that is, they are compound verb phrases where one hundred is expressed as ten tens (/wa:v-a c-wa:v-a/ ten-tns pl-ten-tns) and one thousand is rendered as ten times ten times ten (/wa:v-a č-wa:v-a v-wa:v-a/ ten-tns pl-ten-tns stative-ten-tns). When all the syntactic prefixes and suffixes appropriate to the number's function in the sentence are added to such compounds, they become quite complex, not to mention cumbersome and unwieldly from a Yavapai speakers point of view.

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[1]This paper was inspired by Munro's Mojave Numerals' presentation at the first Yuman workshop in 1975. I would like to thank Dr. Munro for providing such a fertile idea, and also to thank Dr. Margaret Langdon for helpful comments. A version of this, The Upland Yuman Numeral System, was presented at the American Anthropological Association Meetings Washington, D.C., November, 1976.

[2]The origin of the initial consonant on /shuna/ is something of a problem if English is the donor language. Perhaps, as Langdon suggests (personal communication) its source is to be found in another American Indian language.

TABLE ONE: CITATION FORMS OF NUMERALS

	Northern Dialects[3]	Southern Dialects
1.	ʔsit-a	ʔsit-i
2.	hwak-a	hwak-i
3.	hmuk-a	hmuk-i
4.	hopa	hopa
5.	θra:p-a	θra:p-i
6.	t-spe (cause-lean)	t-spe (cause-lean)
7.	hwak-spe (two-lean)	hwak-spe (two-lean)
8.	hmuk-spe (three-lean)	hmuk-spe (three-lean)
9.	halθuy-a	halθuy-i
10.	v-wa:v-a	v-wa:v-i
11.	v-wa:v-k ʔsit-k čʔal-a	v-wa:v-k ʔsit-i
12.	v-wa:v-k hwak-k čʔal-a	v-wa:v-k hwak-i
13.	v-wa:v-k hmuk-k čʔal-a	v-wa:v-k hmuk-i
14.	v-wa:v-k hopa-k čʔal-a	v-wa:v-k hopa
15.	v-wa:v-k θra:p-k čʔal-a	v-wa:v-k θra:p-i
16.	v-wa:v-k t-spe-k čʔal-a	v-wa:v-k t-spe
17.	v-wa:v-k hwak-spe-k čʔal-a	v-wa:v-k hwak-spe
18.	v-wa:v-k hmuk-spe-k čʔal-a	v-wa:v-k hmuk-spe
19.	v-wa:v-k halθuy-k čʔal-a	v-wa:v-k halθuy-i
20.	v-wa:v-a hwak-a	hwak-a v-wa:v-i
21.	v-wa:v-a hwak-k ʔsit-k čʔal-a	hwak-a v-wa:v-k ʔsit-i
22.	v-wa:v-a hwak-k hwak-k čʔal-a	hwak-a v-wa:v-k hwak-i
23.	v-wa:v-a hwak-k hmuk-k čʔal-a	hwak-a v-wa:v-k hmuk-i
30.	v-wa:v-a hmuk-a	hmuk-a v-wa:v-i
40.	v-wa:v-a hopa	hopa-č v-wa:v-i
50.	v-wa:v-a θra:p-a	θrap-a v-wa:v-i
60.	v-wa:v-a t-spe	t-spay v-wa:v-i
70.	v-wa:v-a hwak-spe	hwak-spay v-wa:v-i
80.	v-wa:v-a hmuk-spe	hmuk-spay v-wa:v-i
90.	v-wa:v-a halθuy-a	halθuy v-wa:v-i
100.	wa:v-a č-wa:v-a	shuna
101.	wa:v-a č-wa:v-k ʔsit-k čʔal-a	shuna ʔsit-k ʔsit-i

[3]These are forms provided by Havasupai speakers Ethel Jack and Florence Marshall. My Hualapai consultant, Irene Haudenschild, gave slightly different forms for multiples of 100; she would occasionally insert a /-k/ between the two morphemes meaning ten in this situation. It is not clear to me whether this was a performance error or whether she had a different system, but the appearance of a same-subject marker in this position spoils the regular pattern. The significance of /v-/ on /v-wa:v/ is as of yet undertermined.

Table One
(continued)

	Northern Dialects	Southern Dialects
102.	wa:v-a č-wa:v-k hwak-k č?al-a	shuna ?sit-k hwak-i
110.	wa:v-a č-wa:v-k wa:v-k č?al-a	shuna ?sit-k v-wa:v-i
111.	wa:v-a č-wa:v-k wa:v-k ?sit-k č?al-a	shuna ?sit-k v-wa:v-k ?sit-i
120.	wa:v-a č-wa:v-k wa:v-a hwak-k č?al-a	shuna ?sit-k hwak-a v-wa:v-i
145.	wa:v-a č-wa:v-k v-wa:v-a hopa-k θrap-k c?al-a	shuna ?sit-k hopa-č v-wa:v-k θra:p-i
1000.	wa:v-a č-wa:v-a v-wa:v-a	θawva

From the system displayed in this table, it is obvious that the Hualapai number 2,111 will contain significantly more morphological material than the equivalent Yavapai term.[4] In fact, the two numerals are included here for comparative purposes; keep in mind that they are citation forms only, and that therefore they are subject to even further inflection.

Hualapai 2,111	Yavapai 2,111
/wa:v-a č-wa:v-a v-wa:v-a hwak-k wa:v-a č-wa:v-a ?sit-k v-wa:v-k ?sit-k č?al-a/ (ten-tns pl-ten-tns stative-ten-tns two-SS ten-tns pl-ten-tns one-SS stative-ten-SS one-SS out + over-tns) or [(10x10x10) x2] + [(10x10)x1] + [10+1] = 2,111	/θawva hwak-k shuna ?sit-k v-wa:v-k ?sit-i/ (thousand two-SS hundred one-SS stative-ten-SS one-tns) or [1,000x2] + [100x1] + [10+1] = 2,111

1.0 Citation Forms

Turning to Table One, we can examine characteristics of the Northern and Southern version of Upland Yuman numerals. Note the following things:

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[4]It might be argued that we should not concern ourselves with larger figures, as Northern Pai Indians have little opportunity to use them. Nothing could be more mistaken. With hundreds of thousands of dollars in land claims against the United States Government a topic of conversation on every Northern Yuman reservation, the Indians have both opportunity and motivation to use such numbers.

(1) The "tense" marker[5] for Northern dialects is /-a/, Redden's aorist, or general tense. Yavpe dialects show /-i/, the so-called "present" or "manifestitive" tense on the right-most verb. (As far as I can tell, only Southern dialects ever use /-i/, which seems to have derived historically from the auxiliary /ʔi/ to say, to show, to manifest.

(2) Northern dialects use the verb phrase modifier /čʔal/ to come out over, to emerge on top of with numerals between decades after ten. Hualapai speakers, particularly older ones from the Seligman area, recognize /ččkwav/ to pile on top of, as an archaic form serving the same function.

(3) The order of elements in the decade numbers between ten and one hundred are reversed in the two dialect areas. Northern Upland Yuman speakers realize 20 as 10 two's, while Southern dialect speakers say 2 ten's instead. On the other hand, both groups treat multiples of 100 in a parallel way, with the multiplying figure to the right of the number multiplied. Thus, the forms for 20 will differ in the order of elements, while the forms for 200 and 2000 will follow the same pattern, e.g.,

Hualapai		Yavpe	
20.	v-wa:v-a hwak-a	hwak-a	v-wa:v-i
200.	v-wa:v-a č-wa:v-a hwak-a	shuna	hwak-i
	[(10x10)x2]		[100x2]
220.	vwa:va čwa:va hwakk vwa:va	shuna	hwakk hwaka vwa:va
	hwaka [(10x10)x2] + [10x2]		[(100x2) + (2x10)]
2000.	vwa:va čwa:va vwa:va	θawva	hwaki [(1000)x2]
	hwaka [(10x10x10)x2]		

(4) The decade numbers 40, 60, 70, and 80 are pluralized in the Southern, but not the Northern dialects. It is possible to get the plurals of numbers in the Northern dialects, but only in certain constructions where the semantic basis for pluralization is obvious (see following).

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[5]"Tense" does not necessarily mean tense here. The formative /-a/ sometimes seems to indicate aspect; in other cases it appears to be a nominalizer. Glosses must be evaluated in the light of this uncertainty.

(5) A general property of Upland Yuman numerals, shared across dialects, is the presence of absence of the "same-subject" morpheme when various arithemetical operations are to be performed. If a number is to be multiplied by a following digit, the "tense" marker /-a/ will appear on the left-hand number; if the following digit is to be added, on the other hand, the first number will show a /-k/. In other words, /-a/ signals multiplication; /-k/ addition,[6] e.g.,

Hualapai	Yavpe
145. wa:v-a č-wa:v-k v-wa:v-a	shuna ʔsit-k hopa-č-a
hopa-k θrap-k čʔal-a	v-wa:v-k θrap-i
[10x10] + [10x4] + 5	[100x1] + [4x10] + 5

The internal logic of the generalization just stated is not immediately obvious, i.e., it is not clear why addition requires a same-subject indicator, while multiplication requires a "tense" morpheme. (After all, multiplication is the same operation as addition, mathematically). Langdon and Munro (1975) supply a plausible explanation for the presence of /-k/ when figures are to be added, but their hypothesis does not really help account for /-a/ when digits are to be multiplied. The Langdon-Munro hypothesis assumes that the subjects of two numerical verbs separated by /-k/ are, in fact, the same, and that, therefore, this subject must be the unit. Thus, two plus two equals four, which in Upland Yuman is expressed as

(a) hwak-k hwak-k hopa(k yu)

means "the units are two, and then the units are two, and then the units are four." This analysis makes perfectly good sense. The puzzling thing is why there is not a same-subject marker in compounds like 20, 300, 4000. The number 20 is just the number 10 added to itself, and 300 is just 10 added to itself 30 times and so forth. But this mystery cannot be solved until we know what /-a/ actually represents semantically, and we are nowhere near a solution to that problem. Suffice it to say, the two different morphemes are necessary to distinguish addition from multiplication in the internal

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[6]But see footnote number 3 where I mentioned problems with this analysis, at least where my Hualapai consultant is concerned. In any event, the rule stated above works for both Yavpe and Havasupai, so it probably works for Hualapai as well.

composition of compound numbers.[7]

2.0 The Syntax of Numbers

Upland Yuman numerical verbs have several typologically interesting properties, most of which have to do with the types of inflections they take in their various syntactic appearances. The following list of patterns for numbers is not exhaustive, though it does provide an idea of their grammatical range.

2.1 Partitives[8]

When the numbers are used as partitive subjects or as partitive modifiers for noun subjects, they generally appear with the same-subject morpheme /-k/. When used as objects, they appear with the different-subject marker /-m/. In either position they are inflected to agree with person, but not number, of their referents.

(1) m-hwak-t-k m-k^{y}a:-č-a (2-two-temp-SS 2-shoot-pl-imp)
You two shoot! Two of you shoot! (Hualapai)

(2) ma:-č m-yu ʔ-ñ̆a-c ʔ-yu-(y)e:-m ʔ-hwak-k q^{w}aqta-ñu ʔ-yo:-ñ-k ʔ-wiñk ʔ-wa:m-k ʔ-wa:-č-o ʔ-ččk^{y}a:t-č-h (2-sbj 2-be 1-sbj 1-be-also-assoc 1-two-SS meat-that 1-take-conj-SS 1-conj 1-take + away-SS 1-sit-pl-place 1-chop-pl-irreal) Let's you and I (the two of us) take that meat to our house and divide it up. (^{y}avpe)

(3) klo:-ñu-l hopa-θ-k way-o-hi-k yu (boat-this-in four-temp-SS sit + pl-stative-irreal-SS be)
Four can fit in this boat. (Havasupai)

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[7]The question arises as to how Upland Yuman speakers do simple arithmetic, how they say 3 x 2 = 6 or 8 ÷ 2 = 4 or 8 - 6 = 2 or 10 + 7 + 1 = 18. The answer seems to be that simple addition and subtraction are possible, while multiplication (outside of compounding) and division are not, though I am somewhat uncertain about this. David Rood (personal communication) says that division and multiplication are also lacking in Wichita.

[8]By partitive I mean "denoting a part" as in two of the boys, where two boys can be considered a subset of all possible boys. This meaning also covers cases like "the two of us," "two of you," "all of us," etc., where a number or other quantifier indicates the members of a set.

(4) qʷa:qa hmuk-m ʔ-kʸa:-k ʔ-wi (deer three-ds 1-shoot-SS 1-do) I shot three (of the) deer. (Havasupai)

2.2 Adverbial Modifiers

When numbers appear as adverbial qualifiers to main predicates, they generally appear only with the "tense" indicator /-a/, though those that are subject to pluralization do pluralize. In other words adverbial numbers do not normally take person-of-subject inflections matching the main verb, even if other modifiers in the construction do. Two qualifications for this generalization must be stated however: (1) If the adverbial numeral is a compound number, i.e., a number [illegible] infinity, person markers may show up on the last element of the compound. In the Northern dialects this includes the tag "ʧʔal" to come out over. (2) If the semantic situation is such that numbers themselves are being counted, the corresponding grammatical construction is highly marked. In these cases, number morphemes that are subject to pluralization (4, 6, 7, 8, and, by extension, numbers that contain these morphemes) must pluralize. More importantly, all numbers in such constructions occur with the stative marker /-o-/ and the locative case marker /-k/.[9] The loose translation for these forms is "N by N" or "N at a time" (as in the animals came in two by two or he ran up the steps three at a time). Literally, however, they should probably be rendered "at the state of being two's," "by three's," or something to that effect. Examples of each of these possibilities are included below, arranged in order of complexity:

(5) hwak-a m-kʸa: (two-tns 2-shoot) Shoot twice! (Havasupai) [no person marker on /hwak/]

(6) hmuk-a ʔ-sn̈u-k ʔ-kʸa:-k-θo ... (three-tns 1-time-SS 1-shoot-SS-cond ...) If I shot thrice ... If I shot three times ... [person marker on /snu/, but not /hwak/] (Yavpe)

(7) wa:v-a m-hwak-o m-sn̈u-k m-kʸa: (ten-tns 2-two-stative 2-times-SS 2-shoot) Shoot twenty times! (Hualapai) [Note the person marker on /hwak/ two in the compound for twenty; note also the stative marker /-o/.]

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[9] At least I think this is the proper analysis. The /-k/ in question does not seem to be the verbal referent-switching /-k/ for it occurs on these forms even when they are in object position.

(8) t-spay m-swa:r-k-a (cause-six + pl 2-sing-SS-imp) Sing it six times! (Hualapai)

(9) wa:v-a hopa-k m-č?al-k v-naw-k-a (ten-tns four-SS 2-come + out + over-SS stative-up-SS-imp) Jump fourteen times! (Hualapai)

(10) hopa-č-a m-swa:r-e: (four-pl-tns 2-sing-imp) Sing it four times! (Yavpe)

(11) hopa-č-v-k sqe:d-o-v-k-a (four-pl-passive-SS lying + parallel-stative-pass-SS-tns) They're lying there four by four. They're four-ed there. (Havasupai)

(12) v-č-wa:v-o-k hwak-spay-k č-č?al-k-a (stative-pl-ten-stative-SS two-lean + pl-SS pl-come + out + over-SS-tns) There are sixteen here and sixteen there. (Havasupai) They are grouped here and there by sixteens. [This sentence is interesting for the amount of plural morphology it displays. Examine the following paradigm, where the forms all mean N here and N there. (Havasupai)]

(12a) hwa:k-o-v-k-a 2 x 2
(12b) hmu:k-o-v-k-a 3 x 3
(12c) hopa-v-o-k-a 4 x 4
(12d) tspay-o-k-a 6 x 6
(12e) hmuk-spay-o-k-a 8 x 8
(12f) v-č-wa:v-o-k hwak-k č-č?al-k-a 12 x 12

In these constructions, the /-o-/ that I gloss stative, is no doubt the evidential-stative morpheme I discussed in my "irrealis" paper (1975). It is the one that signifies an achieved state, the end result of a process. In other words, it indicates that something has undergone a change and is now in a new state of being. In these cases the change indicated is, apparently, a re-grouping. The /-v-/ here, then, is a passive marker, also indicating a transformation of state. The analysis of /-o-/ is supported by the contrast evident in the following two sentences. The first describes a normal state; the second an a-typical or transformed state. Both sentences are Hualapai.[10]

(13a) ?ñi:sa-v-č mpat hmukspe:-k yu (spider-dem-sbj leg eight-SS be) A spider has eight legs. Literally, The spider's legs are eight.

[10]Sentences suggested by Munro.

(13b) vya-č ʔñi:sa mpat tspe-o-k yu (this-sbj spider leg six-stative-SS be) This spider has six legs. (i.e., there is evidence that this particular spider has undergone a transformation from its normal condition to the one reported on.)

All Upland Yuman dialects have this kind of manner adverbial with /-o-/ and /-k/, plus or minus /-v-/, although its semantic range in Havasupai is not as large as for other Norther Pai speakers. The Havasupais use the construction when the situation described is one of spacial discontinuity of groups ("There are six here and six there"). Both Hualapai and Yavpe speakers can use it to signal temporal discontinuity of groups as well. ("The child ate the beans three at a time," i.e., he picked at them -- ate three, then another three, then another three, etc.).

In any event, that this construction is so highly marked structurally is less remarkable when we compare it to other Upland Yuman adverbial modifiers. Some temporal words such as Yavpe /hipatke:/ "at dawn," "in the morning," are frozen forms, occurring always with /-k-/ and existential /-e:/, even when their sense is from "morning 'till evening." This is true despite the requirement that other temporal forms show associative or switch reference /-m(e:)/. It is probably that the /-k/ manner adverbials have some deep semantic connection to these other frozen forms.

2.3 Main Predicates, Predicates in Dependent Clauses

When a number is the major predicate of a main or dependent clause, it displays regular verbal morphology. The main qualification of this statement concerns the position of person prefixes in complex numeral: person markers generally go on the right-most verb in a compound number, therefore etymologically transparent digits like 6, 7, 8, 16, 17, 18, etc. can be "interrupted" with person markers, as can all decade numbers. (cf. sentences (17) - (21) below, for example).

(14) hwa:k-k ñ-hmuk-k θda:p-k yu (two-SS when-three-SS five-SS be) Two and three are five. (Havasupai)

(15) msi:-ñu-č hme:-ñu-m hwak-k ʔčur-a hopa-č-k yu (girl-that-sbj boy-that-assoc two-SS year-abs four-pl-SS be) That girl and that boy are both four. (Hualapai)

(16) ʔču:r m-hwak-e:? (year 2-two-Q) Are you two years old? Are your years two? (Yavpe)

(17) ʔñə-č ʔčur-a hmuk ʔ-v-wa:v-h ʔ-čat-km (1-sbj year-abs three 1-stative-ten-irreal 1-nearly-inc) I'm nearly thirty. (Yavpe)

(18) ʔñə-č-č ʔ-hwak-t-k ʔčur hmuk ʔ-v-wa:v-č-kñ (1-pl-sbj 1-two-temp-SS year three 1-stative-ten-pl-cmp) We were both thirty. (Yavpe)

(19) ʔčur halθuy-a v-wa:v-k hwa:k-ñ-m-spe-k-θo m-yo: m-pe:m-ha (year 9-tns stative-ten-SS two-temp-2-lean-SS-cond 2-teeth 2-absent-irreal) When you get to be 97 your teeth are gone. (Yavpe)

(20) v-wa:v-a ʔ-hwak-k ʔ-yu-o kak hma:ñ ʔ-wiy-h ʔ-tʔop-y-k ʔ-wi-h (stative-ten-tns 1-two-SS 1-be-transformed + state neg children 1-have-irreal 1-not-again-SS 1-do-irreal) If I were twenty (again) I wouldn't have children again. (If I had it to do over and were twenty, I wouldn't have children this time. (Hualapai)

(21) m-hwak-t-k ʔčur-a wa:va halθuy-k m-(h)opa-k m-čʔal-č-ŋ-yu (2-two-temp-SS year-abs ten nine-SS 2-four-SS 2-come + out + over-pl-2 + k-be) You're both ninty-four. (Hualapai)

(22) ma:-č ʔčur-a shuna ʔsit-k m-ʔsit-i ta:m-km (2-sbj year-tns hundred one-SS 2-one-tns now-inc) You're 101 years old today. (Yavpe)

(23) ʔpa:h-v-c mpara hwak-km (human-dem-sbj leg two-inc) People are two-legged. People have two legs. (Yavpe)

Note that in all these sentences the thing counted (years, legs) remains uninflected. The counting predicate, on the other hand, agrees with its subject in person and number (in addition to whatever other inflections it may carry). Thus, "I am thirty years old" is literally "I am thirty with respect to years" or "My years are thirty."

Times of day usually follow an analogous pattern. Thus "We dance until three in the morning" is rendered literally as "We are three with respect to hours in the morning, dancing," as in sentences (24) and (25). Sentence (26) shows a slightly different version of the same thing. The personal prefix is missing from the number, but present on the auxiliary verb.

(24) ʔpa:-č-č̃ hima:-č-θ-k ye:k ʔn̄a: hwak-č-kn̄
(person-pl-sbj dance-pl-temp-SS morning hour two-pl-cmp) The people danced until two in the morning. Dancing, the people were two hours (into/of) the morning. (Yavpe)

(25) pay-t-k m-ima:-č-k ʔn̄a: m-tspe:-m-č-i (all-temp-SS 2-dance-pl-SS hour 2-six-ʔ-pl-tns) You are all dancing at six in the morning. (Yavpe)

(26) ʔ-swa:r-k ʔn̄a: v-ye:k ʔi-k-k ʔn̄a: hmuk-k ʔ-yu
(1-sing-SS sun stative-morning manif-toward-SS hour three-SS 1-be) I sang until three in the morning. (Havasupai)

(27) ʔn̄a-č-č va-k ʔ-way-k ʔn̄a: tqe:p-a ʔ-hwakspe-č-i
(1-pl-sbj here-at 1-sit + pl-SS day night-abs 1-seven-pl-tns) We stayed seven nights.

2.4 Nominalized Numbers

Ordinal numbers are generally, though not necessarily, nominalized forms and relativization is the most frequent process creating them. As nouns, they take case markers appropriate to their grammatical function in the sentence. Numbers followed by the intensifier predicate /rav/ much, a lot, many, also have ordinal semantics, although, obviously, in this construction the numbers are verbs rather than nouns.

(28) hma:n̄ k-hwak-n̄u k-θra:p-m hwak-o-k-a yo:-č-k wi
(children rel-two-dem rel-five-ds/assoc two-stative-at-tns pick/take-pl-SS do) They picked the second and fifth child, together. (Havasupai)

(29) su + kʔula k-tspe:-n̄u-č n̂-hnaq-m nal-k yu
(bead rel-six-that-sbj 1-necklace-from fall-SS be) The sixth bead fell off my necklace [vs. /su + kʔula tspe:-k nal-k yu/ Six beads fell off my necklace.] (Hualapai)

(30) qʷaqta k-θrap-n̄u-č n̂-maya pe:m-i (cow rel-five-that-sbj poss-milk absent-tns) The fifth cow is dry. (Yavpe)

Contrast the sentences above with number (31), following:

(31) ʔñaː-v-m v-waː-a raː-a wa + si + peː-i vaː-kñ
(day-dem-assoc stative-ten-tns very-tns drunk-tns come-cmp) Today is the tenth time he's come drunk. (Yavpe)

Numbers functioning as "adjectival" modifiers, i.e., as the final element in a noun clause, relativized or otherwise, take the case markers appropriate to the function of the noun in the sentence, e.g.,

(32) qʷalvyawo mpara hwak-m voː-k yu pos-č mpara hopa-m voː-k yu (chicken leg two-with go-SS be cat-sbj leg four-with go-SS be) A chicken walks on two legs; a cat on four. (Hualapai) [instrument]

(33) ʔña-č-č qʷaqta mpara θrap-k-ʔi-č-a ʔ-ʔuː-č-i
(1-pl-sbj cow leg five-SS-manifest-habit-abs 1-see-pl-tns) We saw a five-legged cow. We saw a cow of the sort manifesting five legs. (Yavpe) [object]

(34) ʔpahmi θriː ʔsit-k-ʔi-č-č ke čkʸaː-h ʔum-h
(man arm one-SS-manifest-habitual-sbj neg shoot-irreal not-irreal) A one-armed man can't shoot. A man of the one-armed variety can't shoot. (Yavpe) [subject]

2.5 Summary

The information contained in the previous sections shows clearly that numbers in Upland Yuman are underlyingly verbs, although they may be nominalized for particular grammatical or semantic reasons. In general, their behavior does not present severe analytical problems, even if the associated morphology is occasionally puzzling. This is not to minimize their interest however. A semantic domain like numerals, where challenging but not unanswerable questions arise, is worthwhile investigating for typological reasons, if not for just sheer enjoyment.

Notes on Walapai Verb Root Structure*

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Walapai has several very-high-frequency verb stems that contain a few ultrahigh-frequency morphemes. These stems, though multimorphemic, have the same types of combinatorial possibilities as monomorphemic stems.[1] The various morphemes of the stems give the verb stems quite specific meanings.

{v} is one of the ultrahigh-frequency morphemes. It means *this, very near the speaker*. When suffixed to a noun or in the article /và/, it means *within arm's reach of the speaker*. In adverbs, e.g., /vák/, *here, at/to this place*, and /vám/, *now, today, at this time*, the reference is again to the place where the speaker is or the time when the speaker is talking.

This {v} in combination with {á-}, *move (around/about)*, occurs in the very common verb stem /vá/, which means *go/come to this place, arrive at/reach this destination*. /vá/ is often combined with /-k/ and /-m/ to give further specificity, e.g., /vák/, *arrive here*, and /vám/, *arrive there*.[2] The meaning *arrive very close to* can also be seen in these forms since /vá/ can also mean *hit/strike against*.

ɲá-č vá-k-yu # *I (have) arrived. I am here.*

(1-nom. arrive-to/at-here-be)

ɲá-č vá-m-č-ɑ # *We got there. We arrived there.*

(1-nom. arrive-there-pl.-aorist)

The opposite meaning of /vá/ is formed with another ultrahigh-frequency morpheme {y}, which also means approximately *this, that*, and as an article or adverb *a medium distance away from the speaker, not as close to speaker as* {v}. The verb /yá/ means *go (away), leave, depart*. /yák/ means *leave from there for here*; and /yám/, *leave from here*. In Walapai /yá/ , when referring to a person or movable object, also can mean *lie down, be located at*; but it is clear from comparative evidence from other Yuman languages that two Yuman stems have fallen together phonologically in Walapai. The /yá/ meaning *leave, depart from*, I refer to as {$yá_1$}; and the one meaning *lie (down), be located at*, as {$yá_2$}.

ɲá-č yá-m-yu # *I'm leaving. I'm going.*

(1-nom. lie-at/here-be.)

A different perspective on the matrix can be seen when {v} and {y} are combined with {-ó}, *(cause to) move (back/away)*. /vó/ means *walk, go, travel*. With /-k/ and /-m/, /vó/ has the specialized meaning *go/come/return home*. /vók/, *come (back)/return home*, is said when the speaker is still at home; and /vóm/, *go/return home*, is said when the speaker is not at home. /vó/ has another specialized usage with /kwí/, *rain, cloud, storm*. /kwí/ always occurs with /vó/, i.e., rain is always spoken of as returning.

ɲá-č vó-m-yu # *I'm going home.*

(1-nom. return-(from)-away-be)

kwî-vó-k-yu # *It's raining.*

(rain-return-to/at-be)

{á-} and {-ó} are both bound roots and cannot occur as stems without at least one stem-formative affix. {-ó} must have at least a prefix to form a stem. {á-} can form a stem with a prefix or with the stem-formative suffixes /-m/ and /-l/, as in /ám/, *move/go about a limited area*, and /ál/, *go/come into/inside, come (out) into view.*

/yó/ means *pick up, remove, take away*, i.e., *make something leave from where it is and move toward the speaker.* By extension of this semantic referent range, /yó/ often means *get, obtain, take, go/come for.* /yó/ also means *make, build, fix, repair.* It is unclear to me at this time whether this is an extension of the meaning *remove*, meaning *remove the bad parts and replace with good parts* or whether there is a pair of homophones /yó/, but I tend toward the latter interpretation.

kwêtólya taámya yó-we # *I took the lid off the pot.*

(pot lid remove-do)

kwêvyám yó-v-we # *I'm working on/repairing the car.*

(car make/fix-this/here-do)

/yó/ also means *lie/be located in a geographic location.* This /yó/ usually refers to natural geographic features, but it can refer to man-made things such as cities and houses. I consider this /yó/ a homophone of /yó/ meaning *remove* and related to the /yá/ meaning *lie (down).*

ɲà wá-č mák-ɑ-l yó-k-yu # *My house is on the other side (of the road).*

(1 house-nom. back-the-in/on located this/here-be)

The opposite of /yó/, *pick up*, is /wó/, *put/set/lay (down).* It contains the {w}, which in articles and adverbs means *that, far/away from where the speaker is.* The causative prefix /či-/ usually occurs with /wó/, and the meaning is often *put into/up/away.*

klǒ i-yó-m-ik há ki-yú-yi-k č-wó-č-ay-wi # *We'll take the boat out of the water and put it up on the riverbank.*

(boat 1-remove-SS water agent-be-at/on caus.-put-up/out-pl.-fut.-do)

/wá/ would, if it fits the system, mean *move away.* This is seen in the meanings it usually has, *carry (off/away), take/bring (with).* /wá/ can also mean *live, dwell, sit, be/hang around, stay, remain, be located at.* I consider this second /wá/ not a part of the system being described here, but a part of the system containing also the other /yá/ and /yó/ which don't fit the system under discussion.

ȧhá-č čĭkmí-m hwál k-sakév-a wá-m-ò-k-wi # *The water washed away the bridge across the wash.*

(water-nom. gully-across/away timber agent-cross-the move/carry-away-applic.-3-do)

čĭmyúl-a-č kwêmá-v-a ɲì-ó-č-ik mátè-a-l wá-m-č-m wí-č #

(ant-the-nom. food-this-the rel.-find-pl.-SS ground-the-in carry-away-pl.-hab. do-pl.)

When the ants find food, they take it down under the ground.

kwê-ka-v-yám-a-č wá-v kwač-a-k wá-k-yu # *The car is beside the house.*

(thing-agent-intense-go-the nom. house-this side-the-at sit/be-located-3-be)

{h} with articles, pronouns, and adverbs means *far distant*. /há/ means *look at distant object*. /hám/ means *speaker/someone near speaker looks at distant object*; /hák/, *someone at a distance looks at speaker/someone/something near speaker*. Since the bound verb root {á-} is used here, it would seem that the eyes in Walapai are conceived of as traveling over the distance to the objects being viewed. (There is no verb /*hó/, probably because of the physical impossibility of moving an object with the use of the eyes.) (The verb meaning *see/look at close-by object* is /ú/.)

ɲá-č vám há há-m-yu # *I just saw him. I saw him today.*

(1-nom. now/today he/him see-distant-be)

The other two morphemes that occur in the relative-distance series with articles, pronouns, and adverbs, {ɲ}, *that, far away*, and {θ}, *that, previously mentioned*, do not occur as stem formatives with the bound roots {á-} and {-ó}; but since these phonemes do occur in different morphemes in stem prefixes, these phonemes do occur before /ám/ when the vowel of the prefix is elided. /ɲ(i)-/, *subordinate to, related to*, occurs in /ɲ(i)ám/, *when passing/going by*. /θ(i)-/, a type of causative prefix, occurs in /θ(i)ám/, *send*.

In addition to the morphemes in the relative-distance series discussed above, there are other ultrahigh-frequency single-phoneme morphemes that form stems with the bound roots {á-} and {-ó}. {p}, *from out of the inside of*, when combined with {á-}, as in /pá/, *go/come out from the inside of*; when combined with {-ó}, as in /pó/, it means *spill (out)*.[3]

wá-m ɲá-č pá-k-m hát-a-č hé čĭ-wí-r-wí-r-wi-ɲ #

(house-from 1-nom. come-out-at-DS dog-the-nom. tail caus.-do-intense-do-intense-do-perf.)

When I come out of the house, the dog wags his tail.

kwâθtí-l tí-v-ȧ pó-k-we # *I spilled the tea (which was) in the cup.*

(dish-in tea-this-the spill-at-do)

ɲá-č pá-k-yu # *The sun is up. It's daylight.*

(sun-nom. come-out-3-be)

With {á-}, {t}, *cause to move/change state*, means *throw/hurl (away)*. /tám/ means *someone throw away from where speaker is*; and /ták/, *someone throw toward where speaker is*. With liquid substances, /tám/ has a specialized meaning, *pour (out/off)*, but the meaning *cause to move away* is still clear.

kwâslók-v-ɑ wà tá-m-we # *I threw the bucket away.*

(bucket-this-the that/the throw-away-do)

kwâslók-m há-m tá-m-pír-ɑ # *I'm filling the bucket with water.*

(bucket-abl. water-abl. throw-away-full-aorist)

The causative {č(i)-} also combines with {á-}, and it means *throw*. With /-m/, it means *throw away, pour (out/away), send, make/let go away.*

mát ɲù čá-čá-k-u-ɲ # *He piled the dirt up.*

(ground/soil that/the throw-throw-3-be-perf.)

mát-ɑ-k há čá-m-k-wɑ # *She's pouring the water on the ground.*

(ground-the-on water throw-away-3-do)

kwê-m-wí-we čiá-m-we # *I sent your things.*

(thing-2-own/belong-do send-away-do)

qóθ-ɑ-č ɲi-pá-k-ɑ-n kwâθotí i-čɑ-we # *When the coffee boils, I pour it in a cup.*

(coffee-the-nom. rel.-come-out/up-at-aorist-DS cup 1-pour-do)

ɲi-θá miyál čiá-m yá-m-k-yu # *I sent him for bread.*

(just-he bread send-away go-away-3-be)

{-r} is another stem formative and means *do intensely/completely, finish, do/go all the way*. A stem with {-r} often also has the intensive prefix {vi-}, *do very fast/intensely, only, just*. {-r} is not very productive and seems to have fossilized with a small number of stems.

wá-m ɲá-č pá-k-m hát-ɑ-č hé či-wí-r-wí-r-wi-ɲ #

(house-from 1-nom. come-out-at-DS dog-the-nom. tail caus.-do-intense-do-intense-do-perf.)

When I come out of the house, the dog wags his tail.

há-ɲ wí-r-ik kwê má-hì-k-wi # *When he finishes that, he will eat.*

(that-that/the do-complete-SS thing eat-fut.-3-do)

čipáy-ɑ-č vi-yą́-r-im # *The bird is flying away.*

(bird-the-nom. very-go-intense-away)

FOOTNOTES

1. See Redden, IJAL 32:2:143-44, 1966 for a description of Walapai stem and affix patterns.

2. For a discussion of /-k/ and /-m/, see op. cit. 155-56 and 160-61.

3. See Redden, Museum Studies 7:134-41, 1975, for a discussion of /p/.

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SOME PROCESSES OF COMPOUNDING IN WALAPAI

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0. Like other Yuman languages, Walapai shows a variety of interesting morphological processes. Prefixation and suffixation are highly productive means of these processes. In this paper, examples of nominalization are presented to exemplify some of these highly productive mechanisms available in the language. The speaker, Mrs. Maude Sinyella, displays a remarkable imagination and creativity in naming the twelve months of the year. I believe some of the names given here are the products of her creative mind.[1]

1. The following is a complete list of names of the twelve months given by Mrs. Maude Sinyella.

čilqkaló:hiya hla:	January[2]
mováypùk hla:	February
mathávya hla:	March
sqàwokaθiyá:rikiya hla:	April
hlà:kasmá:va	May
kwèkamá:va hla:	June
a'àkamá:va hla:	July
yasàykaá:mča hla:	August
kwafó:yka hla:	September
kwèkañá:ya hla:	October
mà'tkamún hla:	November
kyàndimá:viya hla:	December

2. At a first glance, some of the processes employed in naming the months look clear and simple. One of them is the use of the relativizing prefix for verbs, e.g. mà'tka mún hla: [ma't ka-mun hla:] (earth Rel-become cold month, i.e. earth-colding month -- November).
In many cases, the form N + k(a)-Vstem is followed by /-ya/. This seems to indicate some kind of 'definiteness' or 'emphasis', or if we borrow a poetic term it seems to signify a sense of 'closure'. This is shown, for example, in čìlqkaló:hiya hla: [čilq k(a)-lo:h(i)-ya hla:] (bowel Rel-break-ya month, i.e. bowel-breaking month - January).[3]

This is true also for October kwèkañá:ya hla: [kwe k(a)-ña:-ya hla:] (thing Rel-hunt-ya month, i.e. things-hunting month). The same /-ya/ also occurs in mathávya hla: [mathay-ya hla:] (be windy-ya month, i.e. windy month - March) where the verb stem is simply followed by /-ya/ and a noun to form a compound.

In kyàndimá:viya hla: [kyandi ma:-v(i)-ya hala:] (candy eat-Dem-ya month, i.e. candy-eating month - December), the verb is nominalized by adding the demonstrative suffix /-v/ which, in turn, is followed by the

suffix /-ya/. A variant of this is seen in hlà:kasmá:va [hla: k(a)-sma:-v-a] (month Rel-sleep-Dem-a, i.e. month of being sleepy - May). This conforms to one of the formulae of compounding N + Rel-Vstem, but it is not clear why this does not take the pattern found in mathayya hla: 'March'. In the latter, the term hla: follows the semantically central segment. Mrs. Sinyella does not seem to accept any other way of combining sma: and hla:.

Two cases show the attachment of /-a/ to the verb stem: kwèkamá:va hla: [kwe k(a)-ma:v-a hla:] (thing Rel-get ripe-a month, i.e. things-getting-ripe month - June) and a'àkamá:va hla: [a'a k(a)-ma:v-a hla:] (Saguaro Rel-get ripe-a month, i.e. Saguaro-getting-ripe month - July). In these cases, the suffix in question occurs after a consonant, while the previous examples show the occurrence of the suffix after a vowel or a glide. Then, it suggests that /-a/ and /-ya/ may be variants of a same suffix.

August illustrates a similar case: yasàykaá:mča hla: [yasay k(a)-a:m-č-a hla:] (shade/shadow Rel-move-pl-a, i.e. shade-moving-around month - August). The plural suffix /-č/ is one of the devices which intensifies the action described by the stem: e.g. a:m 'to move' vs. a:mč 'to move around'.

The term for September involves the suffix /-k/ which appears like the same-subject marker: kwafó:yka hla: [kwafo:y-k-a hla:] (thunder=rain-K-a month, i.e. thunder=raining month). However, it may be an irrealis marker, as Hinton points out, which is similar to the suffix /-h/ as in sma:hkyu [sma:-h-k-yu] (sleep-H-SS-Aux; (he) will sleep).

Finally, the term for February presents an entirely different pattern: mowáypùk hla: [moway-puk hla:] (get=warm-bottom=earth month, i.e. getting-warm-bottomed month). The first segment /moway/ is the verb stem as seen in: pú:kal mowáyka [pu:k(a)-l moway-k-a] (bottom=earth-Loc get=warm-SS-a, i.e. On the earth, (things) are getting warmer). Here, for the name February, the verb stem is simply attached to the noun pu(:)k with the primary stress placed on the verb stem.

3. Compounding is a highly productive process in the language and a variety of devices are available for speakers to form a compound. Mrs. Sinyella demonstrated some of the processes in naming the twelve months in her language:

a) N + Rel-Vstem + hla:
b) N + Rel-Vstem-(y)a + hla:
c) N + Rel-Vstem-Dem-(y)a + hla:
d) N + Rel-Vstem-Pl-(y)a + hla:
e) hla: + Rel-Vstem-Dem-(y)a
f) N + Vstem-Dem-(y)a + hla:
g) Vstem-(y)a + hla:
h) Vstem + N + hla:

It is not clear at this stage what constraints there are in the formation of a compound and what tells the speaker to select in one case a process a), but in another a process b) and so on.

Footnotes

1. The data presented here is based on the field research made possible by a generous support from the American Philosophical Society Phillips Fund (summer, 1974) and the University of Kansas General Re-

search Fund (1975).

A list of names of months was first presented to me by Mrs. Maude Sinyella in the summer of 1974. Two years later, in the summer of 1976, I asked the same list again and received exactly the same. This suggests that Walapai speakers may have used (and possibly may be using) those terms. It turned out, however, that no one else except Mrs. Sinyella knew them, i.e. she must have created them. Thus, I am convinced that, in her old age, Mrs. Sinyella possesses a highly creative mind and that she must have followed consistently some processes which are rule-governed.

2. Rena Crook, Leanne Hinton, Edith Putesoy and Nancy Stenson have compiled a dictionary of Havasupai (1976ms) which, thanks to Professor Margaret Langdon, I had a chance to read during the winter of 1976. They list the Havasupai version of this month as jelq lohya [čelq lohya] (čelq 'manure, feces'; cf. also čelq čyutiya 'toilet tissue'). In their dictionary the only other name of the month listed is hla ba gñweva 'October-November'.

3. Leanne Hinton discusses the occurrence of /-e/ and /-a/ in her magnificient dissertation the manuscript of which Professor Langdon had kindly showed to me. She observed that /-e/ occurs after the switch-reference marker /-m/ and /-a/ after /-k/. She noticed that in the text, these mysterious vocalic segments may be prolonged to give the effect of 'continuation' or 'emphasis', and she tentatively calls them 'vocalic increments'. James Redden (1966:153) states that there are two tenses in Walapai: an aorist tense and a non-past tense. The aorist tense is expressed by /-a/. Hinton's vocalic increments, Redden's aorist tense and this /-ya/ all seem to point to a same phenomenon. It seems that Hinton's proposal, i.e. continuation or emphasis, explains the occurrence best.

The Determiner in Kiliwa

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This paper will attempt to sketch briefly the deep-structural relationship obtaining between the Demonstrative, Indefinite and Interrogative pronominals in Kiliwa.

In the following examples it can be seen that the Demonstratives occur as independent pronominals, as post-clitics and as verbal prefixes having an adverbial function[1]:

(1) k^{w}=ku·= mi =pi 'This woman died'
(woman=this=nom. die)

(2) mi=t pi 'This(person,animal) died'
(This=nom. die)

(3) ʔthat=pà·=m ʔ=saw 'I see that dog'
(dog=that=obj. I - see)

(4) pà·=m ʔ=saw 'I see that'
(that=obj. I=see)

(5) mi=t ñ=saw=u? 'Did this (person,animal) see me?'
(this=nom. 3-1=see=Q)

(6) ʔmat=ñ=pà·=q ʔ=t=uham 'We got there'
(land=dist=that=allat. 1-pl=arrive)

(7) ñ=pà·=q ʔ=t=uham 'We got there'
(dist=that=allat. 1-pl=arrive)

(8) ʔmat=mi=l mra·y 'It's nice here'
(land=this=illat. good)

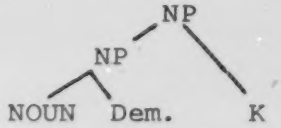
(9) mi=l mra·y 'It's nice here'
(this=illat. good)

(10) mi=m=h=u·y=u 'They do it thus'
(this=obl.= 3=do=pl)

(11) pà·=m = ʔi· 'Say it that way!'
(that=obl.= Imp=say)

(12) hi=m=yu· 'That way'
(that=obl=Be)

These data indicate that the Kiliwa noun phrase is composed of a noun followed by a Demonstrative, with the entire noun phrase being marked for surface case (K) as represented by the following figure:



In the absence of a concrete surface noun the Demonstrative occurs as an independent pronoun. When the abstract noun of Manner is involved, the Demonstrative occurs as a prefix on the nearest verb. The /-m/ general oblique case suffix which homonymously marks objects, instruments, committatives also appears on these prefixal Demonstratives.

The prefixal Demonstratives frequently attach to one of the Classificatory Predicates Do, Be, Say which function as the Auxiliary verbs. The occurrence of these higher predicates in a surface structure is determined by the lexical class of the main verb, i.e. if it is ACTIVE, the Auxiliary /ʔñi· / Do, if STATIVE /yu· / Be, if an Oral/Sensual event /ʔi· / say:

(13) ma?p=t l=m=t=č=ha·y=t m=ʔi·=p
(you=nom. 2= sing=s.s. 2=say=Dec)
'You are singing'

(14) ma?p=t m=ma·=t m=ʔñi·=p
(you=nom. 2=eat=s.s. 2=Do=Dec)
'You are eating'

(15) ma?p=t m=sma·=t m=yu·=p
(you=nom. 2=suep=s.s 2=Be=Dec)
'You are sleeping'

(16) ma?=p=t pà·=m=m=ʔi·=t l=m=t=č=ha·y
(you=nom. that=obl.= 2=say=s.s. 2=sing)
'You are singing that way'

(17) ma?p=t pà·=m=u·y=t m=ma·
(you=nom. that=obl= 2 = Do = s.s 2=eat)
'You are eating that way'

(18) ma?p=t pà·=m=m=yu·=t m=smà·
(you=nom. that=obl= 2 = Be= s·s 2= sleep)
'You are sleeping/asleep that way'

In addition to the above, there exists a pattern of apparent topicalization in which two classificatory Auxiliaries occur:[2]

(19) pà·=m=ʔ=u·y=t ʔ=ma·=tay ʔ=ʔñi·=p
(That=obl=1=Do=s·s 1-eat=freq. 1=do=Dec)
'That's the way I usually eat'

(20) pà·=m= ʔ=yu·=t ʔ=sma·=tay ʔ=yu·=p
(That=obl=1=Be=s·s 1=sleep=freq 1=Be=Dec)
'That's the way I usually sleep'

(21) pà·=m=ʔ=ʔi·=t 1=ʔ=t=č=ha·y=tay ʔ=ʔi·=p
(That=obl=1=say=s·s 1=sing =freq 1=say=Dec)
'That's the way I usually sing'

The occurrence of both Auxiliaries indicates that the sentence - initial Auxiliary phrase is some sort of topicalized copy of the higher predicate which should properly occur in sentence-final position as is to be expected in an OV language like Kiliwa.

The Indefinites Interrogatives

The same three-way surface realization described above for Demonstratives can be found in the Indefinite-Interrogatives, with an additional feature of semantic ambiguity between the Indefinite and the Interrogative function of the independent pronominals:

(22) ʔipa· = ʔmʔà· =si =t yi· 'Someone is coming'
(person=someone=Art=nom come)

(23) ʔipa· =ʔmʔà· =si =t yi· =u? 'Is someone coming?'
'Who is coming?'

(24) ʔmat= ʔap=si=l wa· 'It's somewhere'
(land=somewhere=Art=illat. sit)

(25) ʔmat= ʔap=si=l wa· =u? 'Is it somewhere?'
'Where is it?'

In addition to the fully expanded noun phrase seen in the above sentences optionally reduced indefinite-interrogative noun phrases like those below are synonymous with the preceding ones:

(26) ʔipa· =si=t yi· 'Someone is coming'
ʔipa· =t yi·
ʔmʔà· =si =t yi·
ʔmʔà· =t yi·
si =t yi·

It must be mentioned that these reductions are not all grammatical for the meanings required. The two ungrammatical forms below are only grammatical with the meanings given: /ʔmat=l wa/ 'it's on the ground', /si=l wa/ 'It's on someone'.

(27) ʔmat=ʔap=si=l wa· 'It's somewhere'
ʔmat=si=l
ʔap =l
*ʔmat=l
*si= l

It is interesting to note that in both Demonstrative and Indefinite locative phrases the affix /=ñ=/'distant' can occur; color /ñ=pà· / distant=that is parallel to /n=ʔap/ in /ʔmat=ñ=ʔap=si=l ʔmiʔ=yaw=y yaq/ (land=dist=Ind=art=illat honey lie[s]) 'the honey is over there somewhere'.

The indefinite-Demonstrative analogy extends to the verbal-prefix role. While the latter are necessarily represented by multiple deictics, the former only show /p=/, a general indefinite prefix:

(28) ñaʔp=t ʔ=kʷit p=ʔ=ʔi·=uʔ=s =kʷʔip=m ʔ=spu·w
(I=nom something Ind= I= say=sub=Irr=Fut. sub=Obj
'I know'
'I know what I am going to say'

(29) ʔmat p=yu·=uʔ=l tʔil=q ʔwi·y t=h=ña·t=t=u· ʔa·
(land Ind=Be=Rel=illat north mtn. thing=3=hammer=
nom. Be called)
'In a place called Smashed Northern Mountain'

(30) ʔmat ʔ=ʔi·=m 'sometime, when'[3]
(time Ind=say=sub)

(31) p=m=u·y m=imaʔ=uʔ 'How do you dance?'
(Ind=2=do 2=dance=Q)

(32) p=m=u·y m=imaʔ=uʔ=m ʔ=spu·w 'I know how you dance'
(Ind=2=do 2=dance=Rel=obj I-know)

(33) p=m=ʔi· m=p=ha·yp=uʔ 'How do you speak?'
(Ind=2=say 2=m·p= speak)

(34) p=m=ʔi· m=p=ha·yp=uʔ=m ʔ=spuw 'I know how you speak!'
(Ind=2=say 2=m·p=Speak=Rel=Obj I=know)

(35) p=m=yu· m=sma·=uʔ 'How do you sleep?'
(Ind=2=Be 2=sleep=Q)

(36) p=m=yu· m=sma·=uʔ=m ʔ=spu·w 'I know how you sleep'
(Ind=2=Be 2=sleep=Rel=m I-know)

The absence of a noun in the Manner expression involving 'how' is motivated by the same explanation presented for its absence with the Demonstratives above.

Unlike the Demonstrative verbal prefixes which are phonologically identical with the non-prefixal Demonstrative, the /p=/ Indefinite prefix is not identical with any of the Indefinites. However it is possible that /p=/ is a phonologically reduced version of a general Indefinite */ʔap/.

We have seen that /ʔap/ is normally associated with locative expressions, however there are indications that /ʔap/ 'somewhere' at one time had a more general meaning in that an almost identical form /ʔapu/ means 'which'. Furthermore /p=kʷi·t/ 'which', a synonym for /ʔapu/ 'which' seems to bear the reduced prefixal form. This would argue for a historic relationship between all three: *ʔapu *ʔap *p=.

The nominal case affixes normally suffixed to nouns, also occur prefixed to verbs after a prefix /ʔ=/ which is a general nominal marker in Yuman:

(37) ʔ=l= ʔ=čkhu·w 'I whistled into it'
(nom=illat=1=whistle)

(38) ʔ=m=ʔ=ña? 'I hammered with it'
(nom=inst=1=hammer)

(39) ʔ=q= m=lax 'You stuck to it'
(nom=allat=2=adhere)

The nominative /t=/ prefix occurs in a disguised form as a general object prefix 'something, what':

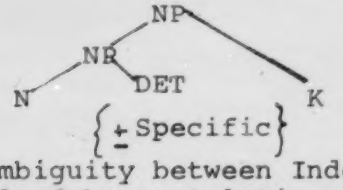
(40) t=h=ma. 'food, what they eat'

(41) t=ʔ=puw 'what I am able to'

(42) t=ʔ=čhi. 'what I drink'

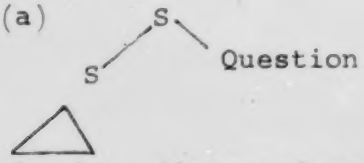
This prefix seems to be the prefixal variant of ʔ=k^{w}it 'something'. It will be recalled that *ʔap and /p=/ mentioned above seem to be related in the same way.

The simplest explanation for the strong syntactic and semantic parallels between Demonstratives and Indefinites is to consider both to be members of a single Determiner constituent in the Kiliwa noun phrase:

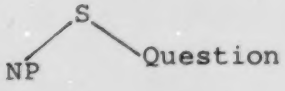


The ambiguity between Indefinites and Interrogatives can be resolved by postulating a phonologically unrealized Question predicate to underlie all Questions. Thus a Yes-No question is distinguished from an Information Question by a difference in the domain of the Question predicate. If the domain is the entire proposition the result is a Yes-No question; if the topic of the predicate is a semantically unspecified noun phrase, an Information Question seeking to specify that noun is involved. The two diagrams below capture this difference:

(a)



(b)



The data discussed previously show that the Noun Phrase may involve either concrete nouns like Place, Person, and Time or abstract ones like Manner. In Manner questions the /p=/ Indefinite appears as a verbal prefix on a topicalized copy of the Classificatory Auxiliary that expresses the semantic indefiniteness of the abstract Noun Phrase. It will be recalled that the Auxiliaries were topicalized for emphasis in non-interrogative demonstrative manner adverbials as well.

The River and Pai languages show the same patterns involving a Determiner; notable is the strong similarity between the Indefinite prefix ka= and the pronominal Indefinite maka=. This recalls the hypothesized alternation between *ʔap and *p= described for Kiliwa above. These facts would seem to indicate that the analysis presented here might well be extended to Proto-Yuman. Subsequent study will test this hypothesis which must remain outside the scope of this presentation.

NOTES

[1]Abbreviations:

allat.	=	allative
Art.	=	indefinite article
Dec.	=	declarative complementizer
Det.	=	determiner
dist.	=	distant
d.s.	=	different subject
illat.	=	illative
Ind.	=	indefinite
Inst.	=	instrumental
Irr.	=	irrealis
freq.	=	frequentative
Fut.	=	subordinate future
m.p.	=	medio-passive
nom.	=	nominative
obj.	=	objective case
obl.	=	general oblique case
pl.	=	plural
Q	=	question
Rel.	=	oblique relativizer
s.s.	=	same subject
sub.	=	subordinator

Pronominal prefixes are numbered: 1, 2, 3.

[2]Note that the main verb /u·y/ 'do' is employed in pre-verb position, i.e. sentence initial position as opposed to /ʔhi·/, the Auxiliary 'do' which is used in post-verb position.

[3]This expression is probably best considered a fossilized construction.

YUMA(KWTSAAN) AFTER 40 YEARS[1]

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In 1935, just over 40 years ago, A.M. Halpern began his field studies of the Yuma language which were to result in the first systematic description of a Yuman language (Halpern 1942, 1946 a-b, 1947). Not only was his work to serve as model for subsequent descriptions of other languages of the family and to provide basic insights into the structure of Yuman languages in general, but it now makes possible a comparison between the language as spoken when Halpern first started his fieldwork and the present time.

The main body of Halpern's data consists of traditional textual material obtained of necessity from the older and more knowledgeable speakers of the language (supplemented of course by intensive grammatical elicitation), while the present report is based on the speech of young adults serving as consultants in 1975 and consists of a variety of utterances elicited in the context of a field methods class at UCSD and other work sessions.[2] It is therefore clear that the distance separating the two sets of data is equivalent to three generations.

To facilitate identification of the two sets of data, the earlier recordings (always in Halpern's notation unless otherwise specified) will be labeled Yuma (Yu), while the modern ones will be labeled Kwtsaan(Kw), i.e. the native designation of the tribal group and language. The Kwtsaan data are transcribed in a practical orthography developed with the help of our consultants in the fieldmethods class.[3] The two systems are roughly equivalent except as discussed below, but differ somewhat in analytical depth, since Halpern's transcription reflects a full-fledged phonemic analysis occasionally closer to the systematic phonemes of generative phonology than to, say, those of Bloch and Trager, while our orthography is closer to a broad phonetic transcription since in some cases it is not clear to us at this time what the underlying representation of some segments should be for the 1975 stage of the language. Some of the ways in which the two phonological systems differ are discussed below.

While this paper focuses on differences between the two stages of the language and their implications for the synchronic description of present-day Kwtsaan, this should not be construed to imply that a major disruption has occurred. On the contrary, as the discussion below will make clear, Kwtsaan is the same language as Yuma and there is no evidence whatsoever of a breakdown in communicative function.

Phonology

One of the most distinctive phonetic characteristics of Yuma/Kwtsaan is the very common occurrence of the phone [t^s] where cognate forms in most other Yuman languages have [$\check{s}$]. For Halpern, [t^s] and [$\check{s}$] are allophones of the phoneme /c/:

> The dental pronunciation of c is the more frequent when c occurs in the initial or final position of the word, in the medial position followed by o, o·, u or u·, or as the initial member of a consonant cluster... The dental-alveolar pronunciation of c is the more frequent when c occurs in the medial position in the word followed by a, a·, e, e·, i, or i·... (Halpern 1946b:27)

In Kwtsaan, on the other hand, we consistently record [t^s] for all instances of Yuma /c/. We interpret these facts to mean that in 1935 a sound change $\check{c} \rightarrow t^s$ was in progress and has now run its full course. Speakers of Kwtsaan are conscious of this difference between their language and other Yuman languages with which they have direct contact. We even venture the suggestion that the sound change, once begun, may have received reinforcement from this awareness since the use of the segment [t^s] unambiguously identifies the speaker as Kwtsaan and not, e.g. Mojave, a neighboring language with which Kwtsaan shares many features.

A style of speech in which a number of instances of the older [$\check{c}$] are used is still known and is associated with very formal occasions.

The phone [$\check{c}$] itself does occur in the speech of our consultants, but in forms where Halpern records a phoneme /t^y/. This is a very rare segment and in most cases is the result of the surface coalescence of the underlying sequence t + y. It is unambiguously attested only in the morpheme /t^ya/ 'completed action, universally true, obviously':

(1) Yu: ʔavá:m-tᵊk ʔadú-t^ya 'I have arrived there' (Halpern 1947:156)

(2) Kw: 'aduum 'adotkucha 'I did it (obviously, although I shouldn't have).'

In Kwtsaan, [$\check{c}$] from /t^y/ freely varies with [t^y] and [$\check{c}^y$], and so it seems that the completion of the change $\check{c} \rightarrow t^s$ has freed the phone [$\check{c}$] for other uses and it is now on its way to overtaking [t^y]. It is clear that these changes are of a purely phonetic nature and do not in any way affect the underlying system.

The rest of the consonantal system is as described by Halpern. One clarification may be useful: the segment Halpern transcribed /š/ (transliterated sh in the practical orthography) is phonetically an apico-postalveolar fricative [s̻] and patterns with /t/ rather than with palatals.

Things are somewhat more complicated in the area of vowels. In Langdon (1976a) I have shown that the stressed vowels of Yuma (5 short and 5 long) can be derived from an earlier 3-vowel system (3 short and 3 long) by a set of diachronic phonological rules, some of which still have synchronic validity, particularly in the verb system. One process, consisting of two rules, raises the short low vowel /a/ first to [e] and then to [i] as follows:

(3) Yuma vowel raising rules: 1. $a \rightarrow e / \left\{ \begin{matrix} +pal \\ +lab \end{matrix} \right\} __ \ ^*$

2. $e \rightarrow i / [+pal] __ [+pal]^*$

*if no boundary intervenes between the vowel and the conditioning environment; pal = c, k^y, n^y, l^y, y; lab = k^w, q^w, x^w, w.

There is now evidence in Kwtsaan that the environment conditioning the application of Rule 2 is being expanded in the direction of that of Rule 1. Some examples illustrating this tendency are as follows:

(4) 'red' /ʔ-x^wat/ Yu ʔax^{w}et → Kw 'axwit

(5) 'bear' /max^{w}at/ Yu max^{w}et → Kw maxwit

(6) 'to cut' /ak^{y}at/ Yu ak^{y}et → Kw akyit

(7) 'me' Yu ʔan^{y}a·p ~ ʔan^{y}ep → Kw nyip

If this trend were to become more general, it would lead to a collapsing of the two rules into one, taking a to i in one operation in the environment of rule 1, resulting in a simplifcation of the rule system. It is, however, very unlikely that this will be the future result, in view of the fact that we have recorded instances of raising of a to e in environments not covered by rule 1, but apparently more similar to rule 2. Thus

(8) 'that (obj)' Yu ava-n^{y} -> Kw ave-n^{y}

(9) 'this (obj)' Yu vada-n^{y} -> Kw vade-n^{y}

(10) 'this (sub)' Yu vada-c -> Kw vade-ts

Note that there is a boundary between the vowel and the following palatal, which does not conform to rule 2. In fact, an alternative suggestion would be to consider these cases as extensions of rule 1, with v and đ added to the labial and palatal group respectively. This is even more intriguing when it is noted that v and đ are from earlier *w and *y. Some versions of generative phonology would attempt to build these facts into the rule system by applying first rule 1 to an underlying form in which w or y has been reinstated and ordering the rule producing v and đ after rule 1. This, however, would be wrong both synchronically, since there are no remaining alternations between w and v and y and đ, and diachronically since the change from w to v and from y to đ is obviously more ancient than the changes in 8-10, which we must assume to have happened since 1935.

The phenomena just discussed for vowels obviously produce a change in the phonemic representation (in the traditional sense) of these forms, but no change in their underlying representations, at least for those cases where related forms still have the underlying vowel. The word for'bear' (5), however, may be on its way to being restructured with i rather than with a, since no alternate forms are available. On the other hand, the rules needed to account for these forms will be harder to state with the gradual incorporation of new environments.

There is in Kwtsaan a phone not specifically reported by Halpern for Yuma, namely a long very low front vowel æ· which I, for one, found distinctly startling since I had never heard it in any Yuman language. In most instances, it corresponds to Halpern's /e·/ which he likens to the vowel of German Weh, but for which his phonetic transcription is [ɛ·].

(11) 'tall' Yu lame· -> Kw lamææ

(12) 'increase' Yu u·cape· -> Kw 'a lot' tsapææ tm

(13) 'to miss' Yu šame· -> Kw shæmæ æ

In addition to the above, which are all instances of this vowel in stressed position, we also find it in unstressed position. It is clear from Halpern's description of Yuma long vowels that there are only three contrasting units in unstressed position, which he phonemicizes appropriately as /i·, a·, u·/. Specifically: "When preceding an accented é, é·, ó, or ó·, i· generally has the quality of accented é·, although in careful pronunciation it may be pronounced with the quality of í·.." (Halpern 1946b:31). In just these environments, we typically record unstressed æ· :

(14) 'doctor' Yu $k^{w}as^{?}i\cdot de\cdot$ [$k^{w}ɨs^{?}ɛ\cdot d\acute{ɛ}\cdot$] → Kw kwasææedææe

(15) 'fierce' Yu masi·de·v (presumably[masɛ·dɛ́·v])→Kw mashææd æ æ v

(16) 'foot' Yu i·me → Kw ææme

(17) 'belly' Yu i·to → Kw ææto

(18) 'face' Yu i·do → Kw ææd o ~ eedo [ɛ·dɔ́]

For items 14-17, no variation was recorded, but 18 allowed two forms. In general, the lowest vowel is more generally present when the following stressed vowel is a front one. On the other hand, we have recorded some words which, in spite of the proper environment, never have æ·:

(18) 'my belly' Yu ?i·to → Kw 'iito (*'æ æ to)

(19) 'horn' Yu i·k^{w}e → Kw iikwe (* æ ækwe)

There are also some instances of stressed /e·/ which are never pronounced æ·:

(20) Kw aaxaakyeev 'they have crossed'

(21) Kw aadeev 'to move aside'

The situation becomes even more complicated when we note sporadic instances of the phone [æ·] in stressed position in forms where the expected vowel is i· or a·:

(22) 'regardless' Yu a·i·m → Kw aayæ æ m

(23) 'that' Yu n^{y}a· → Kw nyæ æ

These facts point to yet a new round of the combined tendency (see Langdon 1976a) to raise low vowels and lower high vowels, this time with a target in the æ· area. If this trend continues, this will lead to an additional contrastive vowel. The resulting very peculiar vowel system would result:

i		u	ii		uu
e		o	ee		oo
	a		ææ	aa	

While the processes leading to the emergence of this new vowel have strong precedents in the history of the language, the oddness of the segment itself and its rarity in the Yuman family must again be noted. The only context in which I have ever been conscious of a similar sound is in some Yuman songs, a source which should not be discounted a priori (for an analysis of the language of Yuman songs, see Hinton 1976).

Morphosyntax

We first note some peculiarities of the use of demonstrative morphemes. Like all Yuman languages, Yuma/Kwtsaan demonstratives exist in both free and affixed form (see Langdon 1968 for the historical developments), the affixed ones being typically shorter and otherwise reduced under the loss of stress which accompanies (or causes) affixation. A very common suffix -n^{y} (best translated 'the') is freely suffixed to nouns and may in turn be followed by the appropriate case marker:

(24) Yu -n^{y}c 'subject', -n^{y} 'absolutive (object)', -n^{y}k 'locative', -n^{y}əm 'ablative', n^{y}əl^{y} 'allative'

In Kwtsaan, we find in addition a suffix -nyiny, only before the subject marker, but of very common occurrence (the whole suffix complex is pronounced nyints), next to forms with only ny + ts (pronounced -ints). There is a statistical preference for the shorter suffix complex to be used after stems ending in consonants and the longer one after those ending in vowels and glides, but the two suffix complexes may also contrast on the same stem, with semantic differences hard to characterize but apparently involving varying degrees of definiteness or specificity. Thus

(25) After consonants: Kw siny'ak-ints 'the woman (sub)' poosh-ints 'the cat'

(26) After vowels and glides: Kw poosh kavtay-nyints 'the big cat'
Kw 'iipaa-nyints 'the man'

(27) Contrastive: Kw 'itskurow-ints 'my car'
Kw 'itskurow-nyints 'my (dear little) car'

The new suffix -nyiny undoubtedly derives from the free demonstrative nyaany 'that one' through a series of steps roughly as follows, each one of which is independently attested elsewhere in the language, and involving among other things, the operation of rules 1 and 2 discussed above:

(28) nyáany-ts → nyány-ts → nyény-ts → nyíny-ts → nyínts → -nyints

We also record the pronominal form nyaanyints 'that one (sub)' which may conceivably be analyzes in two ways, but which in either case shows no less than three instances of the demonstrative element ny:

(29) nyaanyints = nyaany-ints or nyaa-nyints

The restriction of the new suffix to the subject case may be due to the fact that subjects tend to be more specific and definite than other arguments.

Overlapping with the question of demonstratives is the use of a suffix -a (also a troublesome element in other Yuman languages, see e.g. Langdon 1976b) in a function not noted in Halpern's description. In Yuma, Halpern notes a vocative use of -a. We find this too:

(30) Kw 'antay-a kadiik 'Mother, come here!'

He also has a somewhat meaningless 'sentence final' marker -a, of which (31) may be a Kwtsaan example, although it is more likely to be the one to be described below:

(31) Kw 'an'ay-ints aviish tarxaar-a (my=father-dem=sub finish work-a)
'My father finished working.'

In Kwtsaan we often find -a on nominals functioning as objects, where Yuma would have Ø or -n^y as is to be expected in a system where the object case is unmarked. An example of three possible forms of a single sentence is

(32) Kw poosh)
poosh-a) tsakyewsh 'He bit the cat.'
poosh-nya)

Object nominalized clauses typically take the full -nya as in the relative clause

(33) Kw kuskyii 'a-tsuunaly-nya 'a-taxaaw-sh (pot I-drop-nya I-break-evid)
'I broke the pot I dropped.'

Kwtsaan thus does not allow a bare -ny suffix on nouns, but allows it on pronouns, both personal and demonstrative:

(34) Object pronouns: Kw maa-ny 'you', nyaa-ny 'that, him',
vade-ny 'this near', ve-ny 'this'

These pronouns may, in addition, take the suffix -a, but only in rather emphatic contexts:

(35) Kw nyaa-ts maa-ny-a nyi-kaaw-sh (I-sub you-dem-a I=you-hit-evid)
'I hit you.'

(36) Kw poosh-ints nyip-a tsakyew-sh (cat-dem=sub me-a bite-evid)
'The cat bit me.'

Note in (36) the irregular object pronoun for first person with final -p and no -ny.

It therefore appears that the suffix -a is on its way to becoming an object marker. One result of this restructuring is the generalization that demonstrative suffixes on object nouns now all have the shape CV. Yuma had -sa, -va, and -ny, Kwtsaan has -sa, -va, -nya.

More drastic restructuring is affecting the oblique cases. For Yuma, Halpern identifies the following case markers, to which should be added a 'general locative' -i which may be used by itself or in addition to one of the other cases:

(37) Yuma oblique cases: -m 'through, by means of'
-k 'at, from'
-l^{y} 'into'

The Yuma system is similar to that found in other Yuman languages and indeed instances of all these markers are found in Kwtsaan as well. Simultaneously, however, we find evidence for a reshaping of oblique case markings. First of all, we note that in many sentences case markers are interchangeable or optional, probably with fine semantic distinctions between the variants. This too is attested in other Yuman languages.

(38) Kw 'ava-ny-i-ly / 'ava-ny-i / 'ava-ny-a } xav-k 'He went into the house, He entered the house.'

(39) Kw 'ava-ly / 'ava-k / 'ava } kuuvaatk 'Stay in the house!'

More importantly, there is a tendency to replace the use of local-instrumental cases by constructions where the noun expected to be marked for case appears in the same form it would have if it were the direct object. The degree to which this process has progressed varies for each of the case categories, the most eroded being the instrumental use of -m which is consistently replaced by other constructions in our data. The other uses of -m, i.e. 'through, (together)with' are still fairly active, though the comitative too is showing sings of erosion.

The typical Kwtsaan construction expressing the instrumental is illustrated in (40):

(40) Kw 'a'ii wiim mat-ily k-anyoor-k (stick ? ground-into imperative-write-tns) 'Write on the ground with a stick!'

In other words, the noun phrase denoting the instrument is unmarked and followed by wiim, translated 'with'. The expected construction with the case marker -m is illustrated for Yuma by (41) which is emphatically rejected by our consultants and paralleled by an equivalent construction (42)

(41) Yu ʔu·ti·š-m ʔi·pa-m a·k^{y}e·tk 'He guides him with a bow and an arrow.'

(42) Kw 'uutiish 'iipa wiim kyesh 'He shot with a bow and arrow.'

When pressed for a more precise translation of wiim, our consultants volunteered 'using' confirming our impression that wiim is a form of the verb awe 'do'. Variants of this sentence type where wiim is in fact inflected for person in true verb fashion are indeed possible, as in (43) and (44) with imperative and reflexive inflection respectively.

(43) Kw 'a'ii ka-wiim mat-nyi k-anyoor-k (stick imp-wiim ground-loc imp-write-tns) 'Write on the ground with a stick!'

(44) Kw xuumarikaany-ints xa mat-awiim vuunoo-sh (children-sub water self-wiim be=around=pl-evid) 'The children are squirting themselves with water.'

It seems very likely then that this construction is an instance of the typically Yuman type of loose embedding of two clauses and that, e.g. (42) means 'he used a bow and arrow and shot'. The only problem is that this construction would require a suffix -k 'same subject' on the embedded verb rather than -m which normally signals 'different subject'. While Kwtsaan shows serious complications in the switch-reference system (but see now Slater 1977), still a typical construction of this type would show -k, and indeed this is the suffix found in other constructions to be described below. So why -m? As least two convergent factors may be at work to support its presence in the sentences in question. First of all, the verb awe 'do' is part of a class of verbs which, when used as main verbs, are -m marked rather than -k marked (a trait Kwtsaan shares with Mojave). Secondly, it cannot be pure coincidence that -m is the form of the old instrumental case, suggesting that perhaps the wiim construction is a frozen relative clause in the instrumental case which would originally have meant something like 'he shot with the bow and arrow that he used'(42). In support of the antiquity of the construction, we may note it exists in Mojave as well, where it is a rare variant of the otherwise still vital instrumental -m (Munro, personal communication).

A parallel construction using the verb adii 'come' is translated 'from' and is used in constructions where the case marker -k would be expected.

(45) Kw xatmasiny-i adiik aalyaq-sh (horse-loc from fall-evid) 'He fell off the horse.'

This form too can be inflected for person and takes the suffix -k as expected for 'same subject', but note that -k also is the appropriate case marker 'from'.

(46) Kw xatmasiny-i m-adii-k m-aalyaq-sh (horse-loc you-from-k you-fall-evid) 'You fell of the horse.'

Interesting variants of this construction are as in (47) where the verb acquires a prefix m- which cannot be identified here as the second person prefix

(47) Kw xatmasiny-i m-adiik aalyaqsh 'He fell off the horse.'

The only explanation for this prefix which seems at all motivated is to assume that it is in fact an instance of the -m case marker (presumably in its comitative meaning) originating on the preceding noun and transferred to the next word according to the tendency already noted by Halpern (1946 b:151) for a final consonant to be pronounced as the initial of the following word if the latter begins in a vowel. That this process is now more than a phonologically predictable alternation and is fully reinterpreted as a prefix is shown in (48) where the m is preceded by a demonstrative and the whole complex could not be a suffix on the preceding noun which already has its own terminal suffix -a.

(48) Kw xatmasiny-a nyim-adiik aalyaq-sh 'He fell off the horse.'

Another verb conveying the meaning 'from' is kaman;

(49) Kw kuskyii-nyints lamaas -i kaman-k naly-k (cup-sub table-loc from-k fall-tns) 'The cup fell off the table.'

This verb probably means something like'originate from' as in

(50) Kw John-ts Yuma kaman-k 'John is from Yuma.'

It undoubtedly contains the root man 'rise' and it is not at all unlikely that the prefix k- is itself the result of the same transfer of a case suffix to prefix position on the next word, but at an earlier stage of the language. It too can be inflected for person:

(51) Kw 'avii-nyi ma-kaman-k m-aalyaq-k (rock-loc you-from-k you-fall-Q) 'Did you fall off that rock?'

Other locational-directional notions for which no specific case markers exist are also conveyed by this type of construction:

(52) Kw xatmasiny-ts 'iipaa-nya maayk pam-sh (horse-sub man-dem on=top fall=down-evid) 'The horse fell on top of the man.'

(53) Kw xatmasiny-a maayk ma-pam-k (horse-a on=top you-fall-Q) 'Did you fall on the horse?'

The maayk construction is also attested in Kumeyaay (Southern Diegueño) and in both languages it is invariable, acting somewhat like a postposition, which may well become the fate of all these verbs, thus developing what could be considered a whole new case system.

One more instance of the reanalysis induced by the tendency for a suffix to become a prefix on the next word is the appearance of a new set of auxiliaries with a prefix k-, probably a reshaping of the older and pan-Yuman construction illustrated in (54), where the suffix -k is the 'same subject' marker:

(54) Kw ame-k uunoo-sh (cry-same=sub be=around-evid) 'He's crying.'

(55) then could be nothing more than a phonologically conditioned variant:

(55) Kw xaly'up k-uuvaa-sh (bathe k-be=there-evid) 'She's taking a shower.'

That this is no longer the case is shown in (56) where the underlying presence of a -k suffix on the preceding verb as origin for the prefix cannot be defended, since the preceding verb has -m which is mutually exclusive with -k.

(56) Kw makyits amii-m k-uunoo-m (who cry-m ?-be=around-Q) 'Who's crying?'

It is of interest to note that exactly the same kind of reshaping is taking place in Paipai (Joël, personal communication).

Another example is (57) with a -k suffix on the preceding verb and a k- prefix on the following auxiliary.

(57) Kw 'istuuvuuw-nyily atarxaar-k k-uuvaa-sh (garden-in work-same=sub k-be=there-evid) 'He's working in the garden.'

It should by now be obvious that the differences noted between the two stages of the language reflect tendencies which are known to have been at work in Yuman languages at various stages of their history and not, as might be hypothesized, interference from English in the by now fully bilingual context. While these changes are therefore not unexpected, their repercussions for the synchronic analysis of Kwtsaan may be far-reaching, demonstrating among other things that syntactic change can be simultaneously drastic and rapid. Whether this kind of change as opposed to the more obvious kinds of interference across languages tends to be hastened by the bilingual context is an intriguing question which can of course not be answered here. Be that as it may, we are glad to report that Kwtsaan is alive and well and is vigorously pursuing a very Yuman course.

Footnotes

[1] This is a revised version of a paper read at the 1975 meeting of the American Anthropological Association. I have benefited greatly from comments on the earlier version by Abraham Halpern. I also wish to thank Don Crook and Sue Norwood for many insightful discussions of the Kwtsaan data. My research has been supported by the National Science Foundation and the University of California, San Diego.

[2] Our consultants, Christine Emerson and Cynthia Wilson, deserve credit for whatever insights we gained into the structure of their language.

[3] In the practical orthography, the following symbols are the same as Halpern's: p t k q v s x m n l w y r i e a o u; long vowels are written double; in addition, the following equivalences hold (the first symbol of each pair is Halpern's, the second that of the practical orthography): t^y:ch, t:t, k^y:ky, k^w:kw, q^w:qw, ?:', c:ts, d:d, s:sh, x^w:xw, n^y:ny, l^y:ly.

THE YUMAN *n- PREFIX[1]

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0. There appears to be good evidence for reconstructing for Proto-Yuman a diminutive verb prefix of the shape *n. In this paper I will describe the use of this prefix in various synchronic Yuman languages and present the evidence that it must have existed in Proto-Yuman. I will then describe two other *n prefixes, one of which occurs on a group of kinship terms and one of which is used to indicate the plurality of a restricted group of verb stems. Finally, I will argue that these three *n prefixes are ultimately related, and that the diminutive function was the original one.

1. A productive diminutive prefix n- is used in the synchronic Yuman languages Kiliwa, Cocopa, Mojave, and Yavapai (Tolkapaya dialect, hereafter referred to simply as Tolkapaya).

Mixco reports that the Kiliwa prefix n- "ambiguously diminutivizes either the verb action or state or the size of the subject or object of the verb" (1971: 147), citing such examples as

(1a) p+n+táw 'to spread slightly, small subject spreads, to spread small object'
b) p+n+čín 'to laugh (Dim.)'
c) p+i?+n+híw 'to fly (Dim.)'

Similarly, Crawford (1966: 114) describes a prefix n- or, rarely, n^y-, used in Cocopa to indicate the diminutive or affection and tenderness, examples being

(2a) xncáq 'it's bad' [diminutive]
b) rn?úr 'it's spherical' [diminutive]
c) $l^y n^y$cáš 'it's small' [diminutive]
(3) xuncáqxan^y ka·nyú lun?ámxan^y (he-was-little-bad-very he-was-little-in-any-manner he-did-not-little-say-very) 'None whatsoever was as bad as he'

The Cocopa prefix is also used in baby talk, that is, the speech of adults to babies and young children (Crawford 1970).

In Mojave a similar n- prefix also appears in baby talk, as in

(4) ka-m-əndu: (Q-2-dim=be) 'How are you?' (addressed to baby)--cf. standard ka-m-ədu: or ka-m-ədu:-m (Q-2-be-aux=qv)

and in diminutive expressions like

(5a) mankha:v 'little Mojave'--cf. standard makha:v
b) hunmar 'baby' [diminutive]--cf. standard humar
(6) inč?aw-k (dim=little-tns) 'He's little' (about a baby)--cf. ič?aw-k (little-tns) 'He's little' (about an old man)

My most extensive data on the productive use of such a prefix comes from my recent work on Tolkapaya Yavapai. To my knowledge, no instance of an n- diminutive prefix has previously been reported for an Upland Yuman language. However, my Tolkapaya teacher, Molly Fasthorse, uses an n- diminutive prefix in a large variety of sentences, all of which she describes as "baby talk". These include commands, questions, and statements addressed to the baby, like

(7) m-n-yuu-h m-ii (2-dim-come-irr 2-say=exhort) 'Come here!' (to baby)--cf. m-yuu-h m-ii (to adult)
(8) kanyum m-n-vaa-wee (when 2-dim-arrive-Q) 'When were you

born?'; 'When did you come?'--cf. standard kanyum m-vaa-wee

(9) m-n-tuvm ha-m-n-koy-k m-yu-m (2-dim-tuvm ha-2-dim-koy-same 2-be-inc; NB, ...tuvm ha...koy-, with ...'s indicating the position of person markers, is 'half-breed') 'You're a little half-breed'--cf. standard m-tuvm ha-m-koy-k m-yu-m 'You're a half-breed'

The n- may also appear in sentences about babies (or other small or dear creatures):

(10) hman^{y}-h-č kee n-yaam-k yuu (baby-dem-subj where dim-go-same be=Q) 'Where did the baby go?'--cf. standard hman^{y}-h-č kee yaam-k yuu

(11a) hmaan^{y}-č hnwak-k n^{y}θee n-yu-č-k yu-m (babies-subj dim=two-same there dim-be-pl-same be-inc) 'There are two babies there'--cf. standard hmaany-č hwak-k n^{y}θee n-yu-č-k yu-m

b) hmaan^{y}-č hnwak-k n^{y}θee n-yu-č-k n-yu-m (...dim-be-inc)

Finally, this Tolkapaya n- may be used in an utterance like (12), in which an adult "answers" a question like (11) as though the baby addressed were speaking:

(12) ?n^{y}a-h-m ?-n-vaa-k ?-n-yu-n^{y} (day-dem-case 1-dim-come-same 1-dim-be-comp) 'I just came yesterday'--cf. standard ?n^{y}a-h-m ?-vaa-k ?-yu-n^{y}

These examples show that the n may occur (in Tolkapaya at least) in imperatives, questions, and declaratives, and in all three persons. Notice, in fact, that it may occur more than once in a sentence--on the two verbal parts of the complex predicate 'half-breed' in (9), for instance, or on the numeral verb 'two' as well as the main verb 'be' in (11a); even, in (11b) and (12), on the auxiliary verb 'be'. (Notice that the diminutive may occur more than once in Cocopa too, as shown in (3).) It could be argued, in fact, that ability to take the diminutive is a good test for verbal status, on some level, in Tolkapaya.[2] This is significant at least in view of the occurrence of n with the auxiliary 'be' in (11b) and (12) or with auxiliary 'do' in (13):

(13) hman^{y}-v-č ?č-n-maa-k n-wu-m (baby-dem-subj something-dim-eat-same dim-do-inc) 'The baby is eating'--cf. standard hman^{y}-v-č ?č-maa-k wu-m

Chung (1976) has argued quite persuasively that these 'be' and 'do' morphemes are synchronically virtually unanalyzeable parts of "compound tense markers" -kyum and -kwum, but I feel that the fact that these sequences may be broken up by such morphemes as the diminutive n and the first-person prefix ?- (in (12)) shows that the yu and wu/wi must retain a good deal of verbal status. (The actual synchronic role of these tense markers within the speaker's system surely merits extensive further study.)

I suspect that the restriction of the use of the n prefix to verbs holds generally in other languages too. Its occurrence in Mojave expressions like (5) is not, I think, counterevidence to this claim; these words, like the Yavapai auxiliaries, can also be argued to be historically of verbal origin.

I originally proposed that the diminutive prefix could be reconstructed for Proto-Yuman on the basis of its occurrence only in Kiliwa, Cocopa, and Mojave; the discovery of this morpheme in Tolkapaya as well means that it is now attested in all recognized subgroups of Yuman (Kiliwa, Diegueño-Cocopa, River, Pai). I think it very likely that it

will be found in other languages as well. I have devoted a large amount of space to the description of the Tolkapaya n- prefix, then, not only because I believe that it is probably very similar to the diminutive prefix that must have been used in Proto-Yuman, on the basis of the data available, but also because I hope that a sufficient corpus of examples will stimulate other workers to look for traces of this prefix in the languages they work on. I studied Tolkapaya for months before ever hearing this morpheme, and I believe that a certain amount of contextual stimulation (preferably with a real baby!) is probably necessary to discover it.

There are a few lexical occurrences of the n prefix in words for 'little' in two other languages in which the prefix is not otherwise attested--k^{w}intum in the Campo dialect of Diegueño and both cinko-š and vintu in Paipai.[2] Pre-root n's are so rare otherwise in Yuman that the occurrence of n's in these words with obvious diminutive meaning suggests that these languages might once have had more productive diminutive n's. Significantly, the first Paipai word has an alternate form ckos, without the n, suggesting an alternation exactly parallel to the Mojave one shown in (6).

Martha Kendall has remarked on occasion that the only nasal vowel in Verde Valley Yavapai occurs in a word for 'child' or 'offspring', šãwə. Although phonetic nasalization of vowels is common in Tolkapaya, the only unpredicatable nasalization I have observed in that dialect occurs in the same word. It is intriguing to speculate that this nasalization, too, might be a reflection of the diminutive n-.

In all observed occurrences of the diminutive morpheme it appears as an "internal" prefix, immediately before the stressed CVC verb root, after any other prefixed material. This position can, therefore, be postulated for the Proto-Yuman *n-. I believe that the meaning of the prefix can be specified as more than just "diminutive". It may be argued that the n basically expresses the speaker's affection, tenderness, or amused toleration (what we might call generalized diminutive feeling) for the subject of the verb on which the n appears. In the most common use of the prefix, these verb subjects are babies, and therefore a natural extension of the meaning is to "diminutivize" the action of the verb, to make the verb mean '...the way a baby would', or something similar. An example of this from Tolkapaya is

(14) hman^{y}-v-č inma-k n-yu-m (baby-dem-subj dim=dance-same dim-be-inc) literally 'The baby's dancing', but actually somewhat closer to 'The baby's trying to dance' (since obviously babies can't really dance)--cf. standard ...ima-k yu-m

In order to test whether a nonsubject could be the object of the speaker's diminutive feeling, I made up n-versions of the following sentences and presented them to my Tolkapaya teacher:

(15) kθar-če hman^{y}-və čnk^{y}o-k yu-m (dog-subj baby-dem dim=bite-same be-inc) 'The dog bit the baby'--standard ...čk^{y}o-k...

(16) vhle-v-če hman^{y}-və čnqam-k wi-n^{y} (old=man-dem-subj baby-dem dim=hit-same do-comp) 'The old man hit the baby'--cf. standard ...čqam-k...

(17) vhle mšev qyat-č hman^{y}-və čnqam-k wi-n^{y} (old=man mean very-subj baby-dem dim=hit-same do-comp) 'The very mean old man hit the baby'--cf. standard ...čqam-k...

In each case, it seemed that the use of n in these sentences was interpreted to refer to the subject, not to the object, even though the object was in each case the canonical diminutivized person. For instance, Ms. Fasthorse's reaction to (15) was that it would only be acceptable if the dog in question was a small puppy. (16), in turn, implies that the old man referred to gave the baby a love pat--the action of the verb at least, and by implication the subject (or his motives) as well, are diminutivized, not the object. Similarly, (17) is also acceptable baby talk, but it means that "maybe the man wasn't as mean as we thought", since, as before, he just gave the baby a love pat. Again, the primary diminutive feeling is directed toward the action and its agent. In all other examples of the use of this prefix that I have seen other than the Kiliwa verb in (1a), the meaning is similarly restricted to the subject, and by extension, the action, of the modified verb; I assume that the possibility of reference to the object in some Kiliwa uses of the morpheme must also be an extension from the basic subject-reference.

2. The second n- prefix that I will discuss is one which occurs in a group of kinship terms. Langdon recognized this prefix as a separate element in her grammar of Diegueño (1970: 131), saying that it "denotes consanguineal relatives of older generations than ego, except for parents. Occasionally, the reciprocal term (used by the relative in question to refer to ego) is attested and has the same form without the prefix", examples being

(18) -nəka:č 'father's sister' -ka:č 'brother's son'
-nəmu:s 'great grandparent' -mu:s 'great grandchild'

As far as I can tell, the meaning of this prefix for Yuman generally is probably somewhat more general than that given by Langdon. Wares (1968) cites fifteen kinship term cognate sets containing n- prefixes, words for 'father' (150-152--Wares' numbering), 'father's older brother' (154), 'father's father' (155), 'father's mother' (156), 'father's sister' (157), 'mother' (284), 'mother's brother' (285), 'mother's father' (286), 'mother's mother' (287), 'mother's older sister' (288), 'mother's younger sister' (289), and 'older sibling' (376). On the basis of these, it seems that the n- may mean simply 'relative older than ego'. The same reciprocity noted by Langdon can also be reconstructed, at least for sets like *n-pi 'father's sister' vs. *pi 'brother's child' (59).[4]

3. The third prefix I will consider here is a plural marker attested in all dialects of Diegueño, Cocopa, Yuma, Mojave, Yavapai, Walapai, and Paipai. Its use seems to be restricted in all cases for which I have data[5] to some subgroup of motion verbs. Langdon calls the group of verbs which take the n- plural prefix in Diegueño "verbs of directed motion"; they include 'go away', 'be there/be around', 'come', 'come toward', 'go down', 'be in the direction of', pass by/cross over', 'get to the top', 'climb', 'cross over', 'come out', 'go out', 'go in', and 'go around'. The plural prefix n- appears in absolute initial position in the verb stem which it modifies, before all the prefixes which occur in the nonplural form, as shown by these Diegueño examples:

(19) nonplural pək^{w}iɬ^{y}--plural nəpək^{w}iɬ^{y} 'pass by, cross over'
nonplural xəkay--plural nəxəkay 'cross over' (Langdon, 114)

This position seems to be standard for this prefix in all languages for which it is attested.

4. It is understandable that one might want to try to relate the three n- prefixes discussed in sections 1-3, just because n's are otherwise so rare in non-root positions in Yuman. Other than these three morphemes, there are no grammatical morphemes, prefixes or suffixes, of the shape n in Yuman. I believe that such a relationship (admittedly at a rather distant level) can be argued for, on both semantic and morpho-syntactic grounds, and that the evidence indicates that the most reasonable assumption is that the diminutive use is basic.

Two arguments may be based on morphology and the distribution of the morphemes within the Yuman family. First of all, the diminutive, while technically a prefix (as the term is used in Yuman), might be better viewed as an infix, since it frequently appears within a lexical verb (immediately before the stressed root syllable) which is not otherwise analyzeable synchronically--it was for this reason that I glossed some n-plus-verb combinations as complex diminutive stems. The kinship term n also occurs prefixed to the CVC root, but since the roots in question are all simply CVC in shape, with no other prefixes, the kinship n is always the first prefix in the word. The position of the plural n can be quite different, however, since it occurs at the very beginning of the word, before the whole nonplural stem. The morphological evidence, then, suggests that the diminutive prefix (and possibly also the kinship term prefix) is more closely bound to the stem, more deeply integrated into the prefix structure of the word in which it occurs, than is the plural n; this, in turn, suggests that the diminutive may be of greater antiquity than the plural.

Distributionally, the diminutive prefix is more widely attested than either of the other two n's, if its occurrence in all major subgroups is accepted as evidence that it must have once been in pan-Yuman use. The other two prefixes do not occur at all in Kiliwa, the most divergent Yuman language, suggesting that their use may be reconstructed for non-Kiliwa Yuman only.

I think there is a natural semantic correlation between diminutive and "honorific" (i.e., a term applied to someone older or respected) and plural morphemes--for instance, there is at least one Uto-Aztecan morpheme which can be argued to have all three uses, with again, the diminutive meaning being the most basic of these (cf. Langacker n.d., p. 16).[6] But although such "universal" semantic correlations are suggestive, the most powerful evidence for relating these three morphemes emerges from a consideration of how the diminutive could have extended to the other meanings within the context of Yuman structure.

The development of both the kinship term prefix and the plural prefix from the diminutive hinges on the primary reference of the diminutive to the subject of the verb it marks argued for in section 1.

The use of the n in 'older than ego' kinship terms reflects the fact that in Proto-Yuman kinship terms were undoubtedly primarily verbs, only secondarily nouns. The verbal use of kinship terms is still demonstrable for Yuma (Halpern 1942) and for Mojave, and various other facts support this analysis for other Yuman languages.[7] The meaning of these kinship verbs is 'have someone who is one's [kinship term]' or 'call someone [kinship term]'--in other words, the subject of the kinship verb corresponds to the possessor of the corresponding English kinship noun, and it is the object of the kinship verb to whom one might apply the term that is the English gloss. The Mojave sentence ?-intay-pč (1-

mother-tns) has the sense of 'She is my mother', for instance, but must be more literally translated as 'I have her for a mother' or 'I call her mother', since its subject is the speaker.

Many California and neighboring languages have kinship systems in which there is a large degree of reciprocity, in Langdon's sense of the term: the same kin term may be used for both a younger and an older relative (Gifford (1922: esp. pp. 130-131) calls this "self-reciprocity"). I propose that at some stage of (pre-) Proto-Yuman a similar system was in use, with the CVC kinship roots having both "older" and "younger" reference. N-diminutive forms are used extensively in language addressed to or referring to babies in Cocopa, Mojave, and Tolkapaya, and it seems reasonable to assume that this was probably also the case in Proto-Yuman. Since the use of the n-form is restricted (generally) to cases where the baby is the subject of the modified verb, n-forms of kinship terms would always be those of which the baby was the subject and his relative the object. Since babies (generally) have no relatives younger than themselves, n-forms would only be used with reference to relatives 'older than ego'. It seems reasonable that from such a situation the use of n-forms could have been generalized (perhaps for disambiguation) for use in all cases where a once-reciprocal kinship term was being used specifically for its "older" referent. Following this, the use of the n- on these forms became fully lexicalized, and it was no longer synchronically analyzeable in all cases.[8] The appearance of an originally diminutive morpheme on the kin term for the older of a reciprocal pair seems aberrant, in that the usual system is for the younger to be so marked (cf. Gifford (1922: 130)), but it is reasonable given the "reverse" semantics (to our way of thinking) of the Yuman kinship verbs.

I believe that the extension of the diminutive n to use as a marker of plurality on intransitive verbs can also be related to the restriction of the n to subject reference. The other plural morphemes which are used in Yuman have a strong correlation with "objects" either because their use implies the existence of an object (for instance, the č plural prefix, probably related to an instrumental prefix implying action on a "bunch" of objects (cf. Munro 1976: 225), is used in Yuma for a specific "conjungation for distributive object" (Halpern 1947: 93ff.)) or because they have a parallel syntactic use as markers of object nominalization (in Munro 1976 (ch. III) I argue that this is in fact the basic meaning of the plural morphemes). If the other plural markers are correlated with the existence of objects, their use must have at one point at least have been fairly well restricted to marking plurality of transitive verbs only. But there were not many other verb-modifying morphemes available for use as plural markers.

If diminutive vs. nondiminutive verb forms are compared, however, they are very suggestive of plural/nonplural forms. The nonplural/nondiminutive forms refer to generalized action, the standard notion implied by the lexical meaning of the verb. The use of these forms is never inappropriate, even in a diminutive/plural context. But the diminutive/plural forms, which give some added flavor to the utterance, are only appropriate in a subset of the occasions in which the unmodified verb might be used. Formally, there is a similarity between verb forms modified by the diminutive n and those modified by the various plural morphemes in that all the morphemes in question are incorporated into the structure

and are thus very difficult to segment synchronically (as for the purpose of glossing). At least one plural marker, the u: prefix, in fact, occurs at just the same point in the prefix structure of the modified verb that the diminutive n does--immediately before the initial consonant of the stressed CVC verb root. The u: seems to have some connection with objecthood, however, and its use is still fairly well restricted to transitive verbs. It is no wonder, then, that the n might have been perceived as a similar sort of marker which was largely restricted to subject reference, and, by implication, to intransitives. (In fact, most of the cited and freely produced uses of the n diminutive that I have seen have been with intransitives--sentences like (15)-(17) above, while fully grammatical, are uncommon.) I do not think that it is at all unreasonable to suppose that this perceived similarity between diminutive and plural forms, coupled with the subject-reference of the diminutives, could have led to the specialized use of the diminutive n as a marker of plurality on a subgroup of intransitive verbs. Two problems remain, however: the fact that the n plural marker is used only on certain motion and location verbs (not on other intransitives, such as, say, adjective verbs), and the fact that its position in the verb stem is different from that of the diminutive. I have already argued that the initial position of the n plural marker suggests that it reflects a later overlay than the n diminutive, which is so closely bound into the structure of the verb. One possibility is that the initial position of the plural marker was adopted deliberately in order to disambiguate it from the diminutive. This is not, however, the happiest explanation possible, and we must continue to look further for a more persuasive one.

In any event, I believe that I have shown that there is good evidence for considering the n diminutive prefix to have been the source for both the n 'older than ego' kinship prefix and the n plural prefix, though much more work remains to be done on this interesting comparative topic.

FOOTNOTES

1. My thanks go to all those who have discussed these ideas with me; to my fellow Tolkapaya students and to Martha Kendall and Sandra Chung, for insights into Yavapai structure; and to my teachers Nellie Brown and Molly Fasthorse, who provided all the Mojave and Tolkapaya data cited here. My work on these languages was supported by National Science Foundation grant SOC74-18043 and by the Department of Linguistics, University of California, Los Angeles, and I am most grateful to both of these bodies.

The abbreviations used in the glosses for examples in this paper include aux=qv = question suffix on auxiliaries, comp = completed, dim = diminutive, exhort = exhortative, inc = incompleted, irr = irrealis, pl = plural, Q = question morpheme, same = same-subject, subj = subject, tns = tense, 1 = first-person, 2 = second-person. The symbol = separates parts of a complex gloss.

2. Other Tolkapaya morphemes in which the diminutive n may appear which are not synchronically main verbs but which may be argued to be of verbal origin include the negative ?um, the modal yite, predicative pee 'where', and the intensive suffix -ra(v). (I doubt that this list is exhaustive.)

3. These forms are from lexical files in the Yuman archives, University of California, San Diego, based primarily on fieldwork by Margaret Langdon and Judith Joël, respectively.

4. The n prefix never occurs in the Kiliwa cognates Wares cites (sometimes, however, an h prefix occurs); sometimes the n is omitted from the cited Walapai or Yavapai forms.

5. Some of my information about the distribution of this prefix comes from Hinton (1971), an unpublished preliminary survey of Yuman pluralization processes. I have continued this research myself to a small extent, but hope to complete a more general study of Yuman pluralization at some time in the future.

6. Some other "universal" semantic correlations include the use of plural forms as "formal" or "honorific" devices, and, conversely, the use of plural forms of various sorts in baby talk. One example of this is the hospital nurse's "How are we today?" to her patient; in my own experience (even before I started writing this paper) I have often observed myself and my husband addressing our small son with morphologically plural forms (cf. the familiar didums etc.).

7. Margaret Langdon discussed this point in her paper presented at this conference, which she is now preparing for publication at a later data. One piece of evidence on the subject which has not, I believe, been previously reported, is that the Tolkapaya Yavapai plural suffix -č, which on verbs exclusively indicates plurality of subject, on kinship terms (synchronically nouns in Tolkapaya) indicates plurality of the possessor (i.e., the subject of the historical kinship verb). Consider, for instance, ?-talə (1-father) 'my father'/ ?-talə-č (1-father-pl) 'our father [singular]'.

8. Another indication that this use of the n has been fully lexicalized and is no longer recognized as the same as the diminutive morpheme is that the kinship term *n is n^y in Cocopa, while the diminutive *n is n (replaced by n^y in two verb stems only). Grammatical morphemes differ in the degree to which otherwise regular Cocopa sound shifts have applied to them.

Yuman Language Interrelationships: The Lexical Evidence

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0. This paper will describe and discuss a study that considers the question of the degree of genetic relationship among the several members of the Yuman group of languages, each one with each other. The question is explored using cognate lexical criteria. The various degrees of relationship that the data suggest are stated quantitatively and the classification of the Yuman languages is reviewed and discussed in light of these findings.

In 1943 A. L. Kroeber considered the classification of Yuman languages. Using his own field notes and those of E. W. Gifford he devised a pattern reflecting varying affinities. He based his groupings of mutually close languages on comparably similar phoneme inventories and probable shared sound shifts although he included lexical data (103 etyma) in his published statement. Then, in 1957, Werner Winter published a consideration of the Yuman relatedness question. His study uses his own field material, also, which he collected from 9 Yuman languages. He made a lexical as well as a phonological comparison of them and the results of one method supported those of the other. His broader material well bore out the classification of Kroeber and he discussed in detail his findings. He used "---100 lexical items chosen at random, though with considerable emphasis on words from Swadish lists,--"[1] to find identical pairs in two languages. His standards for concluding identity were quite strict. Although pairs were not based on proto forms reconstructed from corresponding, regularly recurring phonemes he speaks of requiring "two corresponding items" to establish identity.[2]

Recently Alan Wares (1968) has presented a monograph comparing Yuman consonants. He compares 12 Yuman languages, collecting material himself in eight of them. A proto phoneme inventory from regularly corresponding phonemes is reconstructed resting on evidence from 501 lexeme sets. He includes a short statement of Yuman classification using lexical data to support one grouping and phonological for the others. In reviewing Wares' work Margaret Langdon (1970) points out the inadequacy of this method and suggests that his abundant and insightful reconstructions could yield a more precise statement of relationships. This present paper is an attempt to do just this.

1. Data. The corpus of data employed here is the "Comparative Yuman Vocabulary" from Wares.[3] Of those 501 lexeme sets 7 sets were not used here because of problems of compounding, cognacy and the like.[4] Of the remaining sets 42 were combined for reasons of redundancy and/or overlap and interchanging of meaning. These pairs are indicated by Wares in his sets. Examples of these are "to cook", "to boil" and "boy", "son". The comparable parts, root consonants, are the same and meaning interchanging. Therefore, a total of 452 lexical sets were tabulated with their cognate evidence for each of the 12 languages used marked. Since the Diegueño evidence is slim in Wares' collection 80 lexemes from the "Dictionary of Mesa Grande Diegueño" by Couro and Hutcheson (1973), a work not available to Wares, that were judged cognate were included. It is from all these

data that the total number of corresponding cognate lexemes shared by each pair of presumed related languages was calculated and the results are presented in Table 1 as percentages.

Within the corpus of 452 sets most (95%) of the Rea (1958) list of 100 select vocabulary items and, also, 185 of the 207 word list of Gudshinsky (1956) are included. Table 2 shows as percentages the shared retained cognate lexemes for each pair of languages with the 100 word list and Table 3 shows the 207 word list. Table 1 is illustrated in Fig. 1 as an isometric projection of the results. At the left in each table the actual number of cognate lexemes retained by each individual language alone is indicated and after it in parentheses is the percentage for the given list that that represents. The languages and their abbreviations are: Campo, Ca; Kiliwa, K; Tipai, T; Diegueño, D; Cocopa, Co; Maricopa, Ma; Mohave, Mo; Yuma, Yu; Havasupai, H; Walapai, W; Yavapai, Ya; Paipai, P. Languages will be referred to by abbreviation throughout the paper.

2. Tables and Figure.

Table 1. Interrelationships with the 452 word list.

#	%		K	T	D	Co	Ma	Mo	Yu	H	W	Ya	P
132	(29)	Ca	13	26	26	25	20	21	19	17	18	20	20
150	(33)	K		26	23	26	25	24	21	23	30	25	28
267	(59)	T			50	56	40	39	37	38	33	37	44
244	(54)	D				43	38	39	35	33	34	39	38
296	(65)	Co					47	44	44	34	47	41	45
285	(63)	Ma						48	47	37	46	42	42
264	(58)	Mo							42	36	45	41	42
260	(58)	Yu								33	34	39	38
243	(54)	H									48	50	46
252	(56)	W										52	55
289	(64)	Ya											53
302	(67)	P											

Table 2. 100 word list interrelationships.

#	%		K	T	D	Co	Ma	Mo	Yu	H	W	Ya	P
38	(40)	Ca	25	37	41	39	36	36	36	41	40	41	41
49	(52)	K		43	45	46	45	44	42	44	47	46	51
64	(67)	T			60	61	62	62	60	59	58	57	63
71	(75)	D				63	66	64	63	63	63	67	68
69	(73)	Co					67	66	64	58	58	63	67
69	(73)	Ma						69	64	61	60	61	68
73	(77)	Mo							69	65	65	66	71
63	(66)	Yu								60	62	62	65
78	(82)	H									81	78	82
79	(83)	W										79	79
83	(87)	Ya											79
83	(87)	P											

Table 3. 207 word list interrelationships.

#	%		K	T	D	Co	Ma	Mo	Yu	H	W	Ya	P
82	(44)	Ca	20	32	37	35	28	32	32	32	29	34	34
84	(45)	K		37	37	40	35	41	33	38	40	39	43
128	(69)	T			57	61	51	56	53	51	50	51	57
131	(71)	D				62	54	59	55	55	52	58	59
133	(72)	Co					58	62	59	52	52	57	61
124	(67)	Ma						60	56	54	54	58	57
138	(75)	Mo							59	59	56	62	62
129	(70)	Yu								52	51	55	54
149	(81)	H									71	72	69
138	(75)	W										71	67
151	(82)	Ya											68
151	(82)	P											

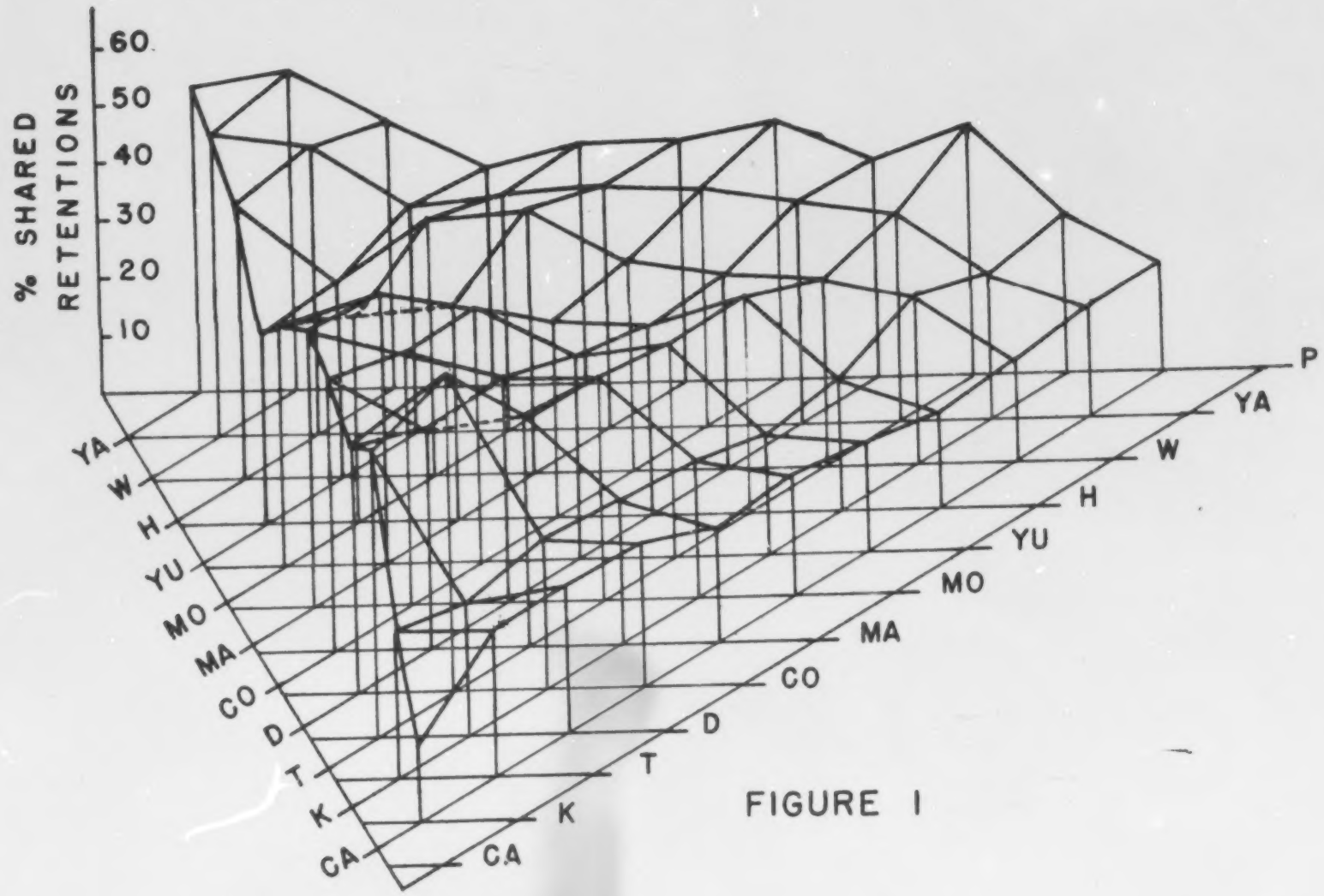

% SHARED RETENTIONS
60
50
40
30
20
10
YA
W
H
YU
MO
MA
CO
D
T
K
CA
P
YA
W
H
YU
MO
MA
CO
D
T
K
CA

FIGURE 1

The two languages most meagerly attested are Ca with 29% and K with 33% retained forms in the full 452 etyma list. On the other hand Ya has 64% and P has 67% of this list and all others alone retain 54% or more. The question in hand, however, is one of relative shared retentions of items by pairs of languages and not that of cognates for each language by itself. Still, in the cases of Ca and K the slim volume should be noted while considering the tables.

All the languages share alike 30 sets (7%) of the 452 list and of these 20 (21%) are included in the Rea list, 25 or 14% for the Gudshinsky list.[5] If these two lists truly represent conservative, long retained vocabulary then the Yuman languages all share a large basic heritage of forms that have been resistant to loss. This evidence set forth here would seem to lend support to one of the cardinal tenets of the theory of glottochronology, that of a long maintained core vocabulary.

3. Discussion. The view of subgrouping within the Yuman family by the workers spoken of at the beginning of this paper can probably be considered simply as Kroeber's arrangement and variations of it. This can be charted as follows:

Kroeber:	Arizona group H, W, Ya	River group Mo, Ma, Yu	Delta group Co, Kahwan	Mexican-Calif. group D, Ca, P, K
Winter:	H, W, Ya	Mo, Ma, Yu	Co, Ca	D
Wares:	H, W, Ya, P	Mo, Ma, Yu	Co, D, T	K

The names of the groups are changed by Wares. He adds P to the Arizona group and calls them Northern Yuman. This, although the P live 300 miles southwest of the other three. These are grouped for reasons of shared lexemes. The River Group he calls Central Yuman and are distinguished from the others phonemically. The Delta and part of the Mexican-Calif. group are combined on phonemic grounds while K is set apart alone for both lexical and phonemic reasons. Wares says that the Delta-Calif. group is not a clearly demarked unit but he does not agree with Winter that D is not part of any subgroup of Yuman languages. Winter sets D as both lexically and phonemically separate while Ca is in an intermediate position between D and Co. In turn, Co is intermediate between Ca and Ma though clearly apart from Ma, Mo, Yu. These three are a separate subgroup from the Arizona three but Mo shares many features with H, W, Ya. These observations are just as Kroeber witnesses in 1943. Kroeber feels that his Mexican-Calif. unit is not a clear one and that Kamia (Ca) is probably a dialect of D. D and Co are close to each other and to the River languages while P and K are similar to each other. He recognized this similarity of P to W but does not join them.[6]

Just what insight do the results of the present study give into this problem of interrelationships. On examining the 452 etyma table the group H, W, Ya, P stands out separately from all the rest. They share retentions in the range of 46% to 55%. Tables 2 and 3 demark them even more dramatically. P shows special closeness with Co and T, also. These last three languages are geographic neighbors now. Winter suggests that the present home of the P is recent, that they are migrants from the northeast, and are a displaced Northern Yuman member. The thesis is supported

here.

The long list supports a closeness of Mo, and of Ma too, to W as spoken of by Kroeber and Winter. The special lists suggest only Mo as being closer not just to W, rather to the northern Yumans as a whole.

Now we note on the full list a clustering of Mo, Ma, Yu and Co, all in the range of 42% to 47% shared retentions. The various degrees of retention among them seem to reflect geographic position, one to another. This is as Kroeber remarked. The conservative vocabulary tables depict much the same thing but add D as having affinities with Mo. Ma and P share a high rate of retentions with Mo particularly.

One more clustering emerges rather clearly from Table 1. That is of Co, D and T. D has its greatest affinities with T on the general vocabulary list but as to long retained vocabulary it appears nearer to Co. In special words D seems more close to P and Ya. Co is as a bridge from D to Mo, Ma and Yu as suggested by others.

On all tables the affinities of K appear to be greatest with the northern Yuman languages, including P. While the total retention by K is scant much of it is of the conservative inventory. This suggests that its retentions with H, W and Ya are not just due to contact with P its nearest neighbor. In fact, K records higher rates of retention of conservative words with the H, W, Ya, P group than of general vocabulary, the more likely borrowed vocabulary.

The position of Ca emerges as being with D, T and Co about equally. It is, therefore, difficult to see it as a dialect of D. It may be the lack of evidence that distorts here.

This same picture can be seen in the isometric projection with the more closely allied language groups appearing rather as hills or mounds. In the upper left the H, W, Ya, P group humps high with their mutual low affinity to Yu making a trough. Then moving right and forward the Mo, Ma, Yu, Co cluster rises. It is not quite so clearly defined. Their mutual low relation with H in particular shows as a valley separating them from the other north languages. Coming on down page and to the right again we see a tent-like hump formed by Co, D, T with the D low affinity to all other Yuman languages cutting like a low line across the figure, up and right. Finally, in the upper right of the figure the K special sharing with W, Ya, P rather than with its neighbors D, Ca and T appears as a slight rise.

Can the phonological correspondences that Wares delineates give any classification insight? The consonant phonemes of Proto Yuman do evince certain patterns in the development of their reflexes. These can be summarized from the chart (p. 70) as follows. (Ca not included by Wares.)

Ya, W, H as a group share no unique development.
Ya, W, H, Mo share *s becomes θ while *s becomes s elsewhere.
Ya, W, H, Mo, K share *ṣ becomes s while *ṣ becomes š elsewhere (s in P).
*ẋ becomes h while *ẋ becomes x elsewhere.
*ẋ becomes h while *ẋ becomes x or x elsewhere.
*$ẋ^{W}$ becomes h^{W} while *$ẋ^{W}$ becomes x^{W} elsewhere.
Ya, W, H, P share alike all developments except above five.

Mo, Ma, Yu share *l^{y} becomes l^{y} while *l^{y} becomes l or ʔ elsewhere.
*y becomes ʤ while *y becomes y post stress elsewhere.
*v becomes v while *v becomes w pre stress elsewhere.

Co, D, T share *l^{y} becomes ʔ while *l^{y} becomes l^{y} or l elsewhere.
*k^{y} becomes k while *k^{y} becomes k^{y} elsewhere.

Co, D, T, K share *v becomes p while *v becomes w elsewhere.
Co unique in *c becomes s while *c becomes c elsewhere.
*t becomes c while *t becomes t elsewhere.
*t becomes t̤ while *t becomes t elsewhere.
*n becomes n^{y} while *n becomes n elsewhere.

D and Yu share *x̤ becomes x while *x̤ becomes x̤ or h elsewhere.

D unique in *k̤ becomes k while *k̤ becomes k̤ elsewhere.

The foregoing summary of the development of proto phoneme reflexes lends no support to view H, W and Ya alone as a group. Their strongest ties are to P with whom they share 21 of the 26 consonant correspondence sets. P differs from the northern three only in that one set they share with Mo and the four others they share with K and Mo. Further, we see that K is apart from H, W, Ya and P only in these four sets which it does not share with P. K and H, W, Ya share common development of 21 of the 26 proto phonemes. Therefore, K appears to be part of Kroeber's "generalized Yuman".

Next, we see that the group Mo, Ma and Yu have three sets of mutual developments. Co does not figure in any of these, rather it unites with D and T for two reflexes and with D, T and K for one more. Then also, Co has four development sets all its own. D has only one unique reflex and joins Yu in another set. With these the lexeme picture is not neatly mirrored. There Co was intermediate between Mo, Ma, Yu and the D, T, Ca languages. Phonetically Co links D, T and K to a certain extent while reflecting many particular developments of its own. It has the phonetically most diverse development of the Yuman languages.

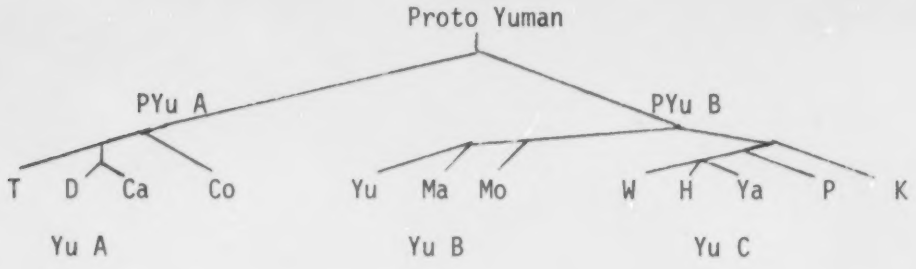
The position of both P and K with relation to their near neighbors geographically is not clear. K shares only one reflex development uniquely with Co, D and T while P shares none.

4. Conclusion. All the evidence compiled and presented here supports certain observations as to the probable patterning of Yuman family interrelationships. This can be described as encompassing a loose unit that can be called Yuma A. It is composed of T, D, Ca and Co. Co appears as a link to another group, Yuma B; the languages Ma, Yu and Mo. In turn Mo bridges these to a large section labeled Yuma C and made up of H, W, Ya, P and K. This group falls apart into a Northern Yuma C (H, W, Ya) and Southern Yuma C (P and K).

The emergence of this pattern can be postulated as occurring as a development of Proto Yuman. A primary split in Proto Yuman produces a group from which descends Yuma A separating from the other Yuman speakers. This Proto Yuman A develops independently and with time divides into the modern Yuma A languages; first Co splits off, then D and T separate and most recently Ca separates from D.

Proto Yuman B continues as a unit and later giving rise to a section which will reflect as the present day Yuma C complex. The remainder evolves as Yuma B. Of the Yuma C group an early fracture isolates the parents of the K speakers. These migrate south and west of the main body.[7] In more recent times a second section repeats this migrant pattern. These are the parents of today's P. Finally, the remainder of the Yuma C divide into what now constitute the H, W and Ya languages.[8]

Diagrammatically this would appear:



This historical explanation of Yuman development accounts for both the phonological and lexical evidence of degrees of interrelationship. Its evolutionary notions which envision separations and migrations of peoples at differing periods of time reflect the complex linguistic patterns presented. The use of letters to name the groups avoids some of the problems of geographical titles.

On the whole the classification of Kroeber continues to be borne out by the more extensive material of this study. The main innovation is the joining of P and K in a larger group with H, W and Ya as sharing a period of common divergence from all other Yuman languages. The affinities of these five were noted by Kroeber with his scant material but he eschewed combining them. Joel felt their various differences far outweighed similarities. On the other hand Wares and Winter both place P with H, W and Ya as undergoing a long period of common development prior to separating. K is set apart, however. The strong phonetic evidence and the lexical evidence, though weaker, attest to an affinity of K with H, W, Ya and P.

This study demonstrates, as pointed out by Winter in 1957, how very close to one another the many languages of the Yuman family are.

Notes

1. Winter (1957), p. 19.
2. Joel (1964) modifies Kroeber's classification of the California Yuman languages on the basis of her field notes. Historical and cultural factors are involved in the explanation.
3. Wares (1968), Chapter XII.
4. These sets are numbered: 69, 96, 279, 305, 396, 464, 494.
5. Those sets retained by all twelve languages are glossed: air/wind, animal/dog, beard/fur, blood, body/meat, cloud, drink, ear, earth, eye, fat, fear, fire, foot/leg, hand/arm, horn, moon, root, one, sky, smoke, three, tongue, tooth, water, wildcat, buzzard, corn, metate, quail/hen.
6. Joel (1964) marks K as clearly divergent. Then P is separated from the California group of Kroeber which leaves only D in that older classification section. The number of cognate stems that are shared among all these

languages is noted as representing an older stratum. The affinities of P with Arizona languages is remarked as reflecting common conservatism rather than long common development. The linguistic divergence of D and Co developed along with rapid culture change influenced by outside contact.

7. This supposes a proto homeland in the Colorado River-Arizona region. One only evidence linguistically to suggest this is the phonetic development of H, W and Ya. They retain the greatest number of PYu phonemes unchanged of all the languages. Sapir theorizes that such languages are more probably living in or near the old homeland.

8. This assigning of letters to mark the groups revives, with alterations, that method used in 1776 by Fr. Francisco Garcés.

THE HOKAN WORD FOR 'WATER': THE POMO EVIDENCE

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INTRODUCTION

In the earliest presentation of evidence for the Hokan stock, 'tongue' was one of only five sets of resemblant forms set forth by Dixon and Kroeber (1913:51). On the basis of the words in six languages--Karok, Chimariko, Shasta, [Eastern] Pomo, Yana, and [Mohave] Yuman--they suggested an original form of apala or ipili. Haas (1963:53) proposed a reconstruction *ipari and reduplicated forms *ipawari (to account for Yana bawal- and Okwanuchu Shasta ipwá) alternating with *ipariwa (to account for Chumash -el?ew, -elew and Washo -alŋ 'lick'). The set for 'tongue' figured in early works by Sapir (for example 1917:5) and later works by Silver (1976) and Gursky (1974:209).

The data employed herein were assembled independently of the above and are often from more recent sources: dictionaries in the series University of California Publications in Linguistics, direct communication with fieldworkers, and my own work among the Western Pomo.[1]

As is potentially true for many body part terms in Hokan, the meaning 'tongue' may lie in three different classes: noun roots, verb roots, and verb prefixes. In any one language or family, the morphemes in the separate classes may be etymologically distinct or they may be related, or the three-way differentiation may be absent or unattested. As a verb root for 'act with the tongue' the translation into English is most often 'lick'. As a prefix it means '(do) with the 'tongue'. Herein I will be principally concerned with nouns, but information from other classes will be brought in when it is available to me and pertinent.

I propose that in Proto-Hokan the root was *PAL and that the noun was formed from it by a prefix *-i-, which pertains to animate beings, especially to the body and its parts. Many Hokan languages have inalienable possessive prefixes on body part terms. For a third person, or indefinite possessor, Proto-Hokan may have had *H-. Thus, a reconstruction of one form of a complete word for 'tongue' could be something like *HiPAL.

In the Proto-Hokan reconstruction, a capital letter is used to indicate that it is not possible to specify closely the phonemic or phonetic status of that segment, but the choice of symbols does indicate its general nature. *H was probably a laryngeal, but there is conflicting evidence on

whether it was *ʔ or *h; even within one language family it is easy to slip from one laryngeal to another (as will be illustrated for Pomoan). The initial *H- of *HiPAL may even not have been a distinct phonemic segment in the proto-language but have originated in different branches on vowel-initial stems from a kind of "rough breathing".

*P was probably a labial stop; in those languages in which there is only one series of stops (for example, Yuman), the reflex is usually p; in those languages with voiced stops (Pomoan), it is often b. Other variations are p^h, p', w, and h.

*L was an apical continuant, most probably the voiced lateral l, but it also shows up as ɬ, l^y, l', n, and r.

*A is attested as a low central vowel in most of the Hokan branches (especially the key language families Yuman and Pomoan), but it may appear fronted (Shasta, Chimariko) or not appear at all (Seri, Atsugewi, Achumawi, Karok). The loss of a vowel is a common enough development in languages around the world but, if some slight evidence should be found that it is the Hokan languages with a vowel that have developed it epenthetically, I would not be averse to eliminating *A from the reconstruction.

*i is in lower case because I have greater confidence that it represents a real Hokan prefix of that particular phonetic shape.

A systematic treatment of the sound developments and of length and accent are not now possible. At the time depth of Hokan, far greater than that of Indo-European, potential cognate sets are too rare to permit the multiple attestation needed for firm rules. The variations will be discussed below in the sections for the individual language families and isolates. Those sections will also contain etyma other than that for 'tongue' in support of the reconstructions and the proposal that *-i- is a Proto-Hokan prefix. 'Tail' is included because of its semantic relationship with, and frequent phonetic similarity to, 'tongue'. The association of the two does not, of course, occur in all branches of Hokan, yet it holds often enough to back a reconstruction for 'tail' of *H-i-P.. and thus there is an added bit of evidence for the genetic relationship of divergent languages within an entity Hokan. (However, I do not feel that there is enough evidence to justify the inclusion in that entity of all languages that have been called Hokan; for example, not the Chumashan languages.)

POMOAN

Language	'tail'	'tongue'	'mouth
Southern	hi b?a-k^{h}le	hi b?a	?ah·a
Kashaya	hi b a·	ha·b a	?ah a
Central	b á·	háwb a	h á
Northern	(ki m à·)	ha b à·	h á
Northeastern	ši?b a·	hu?b a·	h a mo
Eastern	yi·b á·	b ál	x á-č̣i·dà
Southeastern	b a	b al	x̣ a sto
Proto-Pomo	*hi b a·	*hi b al	*?ah a

Within the Pomo family, the words for 'tongue' and 'tail' are much intertwined. In order to disentangle them, I start with the assumption (influenced by the situation in other Hokan languages) that Proto-Pomo had a final lateral in the form for 'tongue', a state evinced only in Eastern and Southeastern Pomo. The other five languages do not have this -l and sometimes have final vowel length. Now, there are a fair number of other sets in which the correspondence holds that Eastern and Southeastern have word-final -l and the other languages -·, but there are also several instances (including the common suffixes -l 'object case marker' and -l 'adverb formative') in which all the languages have final -l (except for the late Southern Pomo development *-l → -n). If PP *-l is used for the latter correspondences then something else must be done about the former. McLendon (1973:28) symbolizes the former correspondences with *-l^{y} in order to point up the resemblance in a couple of sets ('tongue' and 'arm') of Proto-Pomo and Yuma. Herein I shall not treat the absence of -l in five reflexes for 'tongue' as due entirely to a phonologically conditioned sound change of a different kind of lateral but rather as a special case of confusion brought on by the overall similarity in sound and meaning of the words for 'tongue' and 'tail'. This confusion could well have been triggered by an approach in the pronunciation of the terminal syllables *-al and *-a·, but a complete merger of all such instances need not have taken place before *hiba· 'tail' absorbed *hibal 'tongue' in a form with an overall meaning that can be glossed 'appendage'. After the merger, different languages adopted different devices for distinguishing the two particularizations of meaning.

Southern Pomo has a regular sound development PP *CVCV· → CVC·V, and a long b is realized as b?. Southern hib?a is thus the expected reflex of *hiba· 'tail', but it does not mean 'tail', only 'tongue'. Through the semantic intermediary 'appendage', it has ended up with a transferred meaning. 'Tail' is designated by the compound hib?ak^{h}le 'tongue-tree', with which the image is of the 'tail' being

an appendage growing from the body like a plant (-kʰle is the syncopated combining form of kʰa·le 'plant, tree).

In Central Pomo, word-initial syllables beginning with a laryngeal have been lost. Thus bá· is the regular reflex of *hiba· and it has the original meaning 'tail'. 'Tongue' is formed from it by composition:
(há 'mouth' + -w 'in') + bá· → * háwbá· → háwba.
The vowel length and pitch accent of the final syllable of *háwbá· are lost, as often happens adjacent to accented heavy syllables in well-integrated compounds, yielding the actually occurring word háwba. Now lexicalized to 'tongue', háwba is more literally 'tail in the mouth'.

The Kashaya form is of parallel origin. Both -w and -· are locative suffixes meaning 'in, at'. By regular rule w becomes vowel length before all consonants except a laryngeal plus another consonant. The result is that, in the environment within the compound, the two suffixes would fall together as -·.

(ʔaha 'mouth' + -w/-·) + hiba· 'tail' → *ʔaha·hiba·

→ *ha·ba· → ha·ba.

The loss of the initial syllables ʔa- and hi- (aphesis) and shortening of a long vowel are both common processes in compounding. The ordinary Kashaya word for 'tongue' is thus, in origin, also 'tail in the mouth'; but, because of the sound changes and lexicalization that the compound has undergone, that origin is not recognized by present-day speakers of the language.

The Northern Pomo word for 'tongue' has a similar but slightly simpler derivation, because the suffix for 'in' does not appear in it: há 'mouth' + bà· → habà· (there is some reduction in the pitch accent of compounds, but the rules are not well-understood). The segment bà· does not occur independently in Northern Pomo in the meanings under consideration (bá· 'man' is from PP *hiʔbaya). 'Tail' is denoted by an unrelated form, parenthesized in the table. In origin, the meaning of the Northern word for 'tongue' was probably something like 'mouth appendage', but it is not synchronically analyzable as such.

Because there is less material on Northeastern Pomo, the processes involved are less well documented; they also happen to be more complex. The two survivors with any memory of words in Northeastern know 'tail' as ši?ba· but do not know a word for 'tongue'. Halpern's notes (1940) contain ši?ba· 'tail' and have a word hu?ba· cited once as 'lips' and twice as 'tongue'. I assume that the second syllables of the above two words are reflexes of *hiba· in the generalized meaning 'appendage'. The terms are then particularized by compounding:

*ši?ba 'body' + *hiba· → *ši?baba· → ši?ba·

The syllable *hi- may or may not have been deleted first in an intermediate stage but, under this proposal, the construction would be reduced to its final form by haplology, and what was originally a compound 'body appendage' has become synchronically unanalyzable.

The best suggestion I have for the source of the first syllable of hu?ba· is that it is derived from *hu?uy 'eye, face':

*hu?uy + *hiba· → hu?ba·

The earlier meaning would thus be 'face appendage'. The actual Northeastern word for 'eye' is ?uy and that form would be expected in any recently and transparently constructed compound. However, hu(?)- occurs in a couple of other terms for body parts lying on or near the face: huma· 'forehead' and hu?ka 'neck' (neither with clear cognates in other Pomo languages).

Southern Pomo is a much more fully recorded language and in it there are competing types of segmental reduction in compounds. A common process is aphesis (loss of an initial syllable) but deletion of intervocalic laryngeals often takes precedence, along with coalescence of vowels thus brought into contact. With the Southern Pomo word hu?·uy 'face', the first segments to go are the final -y and the length of the laryngeal:

hu?·uy 'face' + kʰa?be 'rock' → hu?ukʰbe 'eye'

(The above also illustrates the loss of the penultimate vowel of compounds.) Next to go is the intervocalic laryngeal: hu?u- → (hu?u-) → hu·-. The syllable hu·- occurs in several terms for facial parts in which the remainder of the word is unidentifiable: hu·mati 'cheek', hu·lušbe 'eyelash', hu·lu·ziy 'eyebrow', etc. I have suggested (1976) this reduction may have led to the formation of the unique Southern Pomo verbal prefix hu- ~ ?u- 'by talking' and by extension 'sound involved'. The alternation in form makes it conceivable that the variation arose from taking either the first or the second syllable of hu?·uy, but it is more certainly related to the general constraints on the distribution of laryngeals (described below in the section on Pomo Body Prefix). If it should be assumed that the Northeastern syllable hu(?)- is derived from PP *hu?uy by a mechanism similar to that in Southern Pomo or, alternatively, that it comes from Northeastern ?uy, with dissimilation of the laryngeal from ? to h in the manner common to Proto-Pomo initials (keeping in mind that this would presuppose a reinterpretation in certain compounds of ?uy as an initial syllable when it is actually from the Proto-Pomo second syllable), then the derivation of Northeastern hu?ba· would be more understandable.

In Eastern Pomo, a well-attested general development is the loss of initial laryngeal syllables. Hence, bál 'tongue' is a regular reflex and yi·bá· 'tail' is not. I have no convincing explanation for the aberration, nor does McLendon (1973:92). The only closely parallel case known to me is PP *hima 'sinew', Eastern yi·má. It is unlikely that yi·- is from compounding with some root, else it would be accented. One could imagine a phonological mechanism whereby *hi- became yi·- but, with the present state of our knowledge, the rule would have to be ad hoc and quite particularized in environment to include 'tail' and 'sinew' but exclude 'tongue','hole'(Eastern mó < PP *himo) and many other examples.

In Southeastern Pomo, initial laryngeal syllables and all inherited length are lost. Hence, bal 'tongue' and ba 'tail' are quite regular reflexes.

I do not know of a Pomo verb root meaning 'do with the tongue' but there is a verb prefix *si-. That prefix, however, has a very wide range of meaning, including many actions involving the tongue and many involving water and other liquids; in Kashaya, by what I assume to be metaphorical extension, it is even appropriate for actions by light movements of air. Thus, with the Kashaya verb root -hye°- 'stop', the form sihyew applies to 'stop licking, sucking, drinking, dissolving, raining, floating, soaring, wafting, etc.' The overlap between the two major instruments 'tongue' and 'water' comes in an action like 'drinking'; however, within the Pomo languages, no one could be picked as original. It is only by comparison with other Hokan languages that the suggestion can be made that 'drink' is earlier (cf. Proto-Yuman *..si.. 'drink'). That which is typically drunk, 'water', also comes to the fore in some Northern Hokan languages. This etymon was discussed in more detail in Oswalt (1975).

In the columns of Pomo cognates above, the noun 'mouth' was included as evidence for the source of the initial syllable in some of the descendant words for 'tongue'. Some of the reflexes of *ʔaha are compounded with other elements: Northeastern mo 'hole', Eastern ć́i·dá 'skin', and Southeastern sto (unidentified).[2]

*ba- '(do) with the mouth' (among other meanings) is included because of its similarity to forms in some other Hokan languages (Yana, Karok).

POMO BODY PREFIX

There is reconstructable for Proto-Pomo a verb prefix *Hi- attested only in Southern and Kashaya Pomo; it would be lost by the regular sound developments in Central, Northern, Eastern, and Southeastern Pomo. The core meaning is 'with the body as a whole rather than by purposeful act

with one of its individual parts'. For example, in Kashaya, with the verb root -ʔťa- 'seem, feel', one could say

sáwʔ$_1$ hiʔťaw$_2$. 'It (the dress) felt$_2$ tight$_1$ (to the whole body).'

In contrast, with the prefix si-, one might say

caha$_1$ síʔťaw$_2$. 'It (the drink) tasted$_2$ bitter$_1$.'

In Southern Pomo, the 'body' prefix is of the form Hi-, where H-is h- when the next consonant group contains a glottalized or voiced stop or ?; it is ?- when the next consonant group contains a sibilant, aspirated stop, or h. Before resonants and a few other consonants there is some morphologically determined contrast. In Kashaya, the prefix is regularized to an invariant hi-. I take the alternation in Southern Pomo to reflect the situation in Proto-Pomo because, in both languages, other parts of speech beginning HV- evince an analogous constraint on the distribution of h- and ?- .

There is no productive noun prefix of similar form and meaning in the Pomo family, but there is some evidence for a frozen one, evidence so meagre and clouded by vowel assimilation that it must be presented as a statistical tendency. For this purpose, excluding verbs, I assembled 100 Proto-Pomo words beginning *HV-. The list includes the majority of such words but is not exhaustive. The following chart gives the number of examples in each of several phonological subdivisions. V represents any vowel and V̌ is a first-syllable vowel which is the same as that in the second syllable; a lower case letter is used to represent only those vowels which are different from the vowel of the second syllable. H-is ?- and h- distributed according to the rules given for the verb prefix.

Phonological Subdivision		Number of Examples	Examples	
HV̌-		42	*hoʔťo	'brains'
Hi-		38	*ʔihsa	'penis'
Ha-		17	*ʔahši	'name'
Hu-		3	*ʔuhqʰa	'belly'
He-		0		
Ho-		0		
HV-	Total	100		

That there are no examples of *He- or *Ho- provides part of the evidence that Proto-Pomo had only a three-way contrast of vowels in word-initial syllables. Proto-Pomo plainly had five contrasting vowels in the second syllable; whether this number might be reduced to three for Pre-Pomo is too large a topic to discuss fully here.

Of the 17 cases beginning *Ha-, 6 are nouns, 3 pronouns, 7 adjectives, and 1 adverb. There is a discernible element *Ha- beginning most deictics, including pronouns (some of the examples are subsumed under the *HV̌- class). That the number of adjectives is so high is suggestive of an adjective formative of a similar shape.

Of the 38 cases with *Hi-, none are deictic, 1 is an adverb, 1 an adjective, and an overwhelming 36 nouns. This is a large enough number to break down further into semantic categories. Of the 36, 22 deal with animate beings and 14 do not. These 22 cases can be broken down still further: 12 are body parts ('bone', 'feather', etc.), 3 are body products ('egg', 'spittle'), and 7 are whole bodies or creatures ('man', 'woman', 'flea', 'condor', etc.). Since only a minor portion of the total noun vocabulary deals with animate beings, the 22 to 14 bias is significant.

Of the 42 cases with *HV̌-, 2 are deictic, 7 are adverbs, 2 are adjectives, and 31 are nouns. Of the 31 nouns, 18 deal with animate beings and 13 do not. The bias in favor of nouns over other grammatical classes and of those dealing with animate beings over other nouns is not quite so pronounced as with *Hi- but is still evident. The lessening of the bias may be due to the merger of former prefix classes. Elsewhere I have argued for a Hokan noun-formative *ʔa- (Oswalt 1975); many of the Proto-Pomo nouns in *HV̌- could be assimilated from Proto-Hokan *ʔa-, others from *H-i-. Vowel assimilation occurs sporadically in the present-day languages, particularly when two vowels are separated by a laryngeal. An example is Kashaya mi- 'your' + -ʔe 'father' → meʔe 'your father'.

In only a few instances can the syllable after the *HV- be related to a morpheme occurring elsewhere; one of the plainest is *hiḍoˑ 'egg', which seems to contain the verb root *-ḍoˑ- '(intransitive) appear, come into existence; (transitive) reveal, create'.

Pomoan provides no evidence for the segmentation of *Hi- into *H- + *-i-; it is other Hokan languages (for example, Chimariko) that suggest that *H- is from a Hokan prefix for a third person or indefinite possessor, now generalized in Pomoan with the concomitant loss of the use of possessive prefixes on body part terms (they remain on kin terms, but the third person prefix is quite different). The main thrust of the preceding discussion, that *Hi- is an old prefix, now barely perceptible in Pomoan, does not rest on the further speculation that *H- has a morphological origin, for *H- could have arisen phonologically within Pomoan as a kind of onset to bring vowel-initial words into the general pattern that all words begin *CV-.

TERMINATION

In order to get this article in on time for inclusion in the present volume, I have had to terminate it before the planned lengthy discussion of the evidence in the Hokan branches other than Pomoan and of the possible effect of onomatopoeia and symbolism on the forms. The earlier title "The Hokan Word for 'Tongue'" has been amended to indicate the paper's more restricted scope, but it has not been possible to delete the occasional internal remarks referring forward to the now nonexistent sections. They are thus left dangling and for that I apologize.

Pending the future completion of the discussion, I present here the bone-bare, key data from those other branches:

Proto-Yuman (I am grateful to the many Yumanists who provided information; the reconstructions are the consensus of those at the conference): *i'-pal 'tongue'; *-i'-a' 'mouth'. The reflexes for 'tongue' display complications as great as, or greater than, those in Pomoan and include compounding with the word for 'mouth', insertion of an affective nasal, and symbolic variation in the final lateral. There are diverse cognate sets for 'tail'; most pertinent is Kiliwa (M. Mixco, personal communication) plsaʔ. Also relevant are Kiliwa pi'n 'lick' and pin 'suckle'.

Seri (Becky Moser, p.c.): -pɬ 'tongue; -paaɬ 'lick'; -iip 'tail'.

Tequistlatec (the first of the pairs of forms is from Waterhouse 1970, the second from Turner 1971): -patl, -báɬ 'tongue'; -petl-, -beɬ- 'lick'; -po, -bo 'tail'.

Salinan (Wm. Jacobsen, field notes): -epal 'tongue'; -etsew 'tail' is unrelated.

Chimariko (J. P. Harrington, field notes): h-i-pʰen '[third singular possessor] tongue'; -pʰen 'lick'; h-awa 'mouth'.

Yana (Sapir and Swadesh 1960): Yahi bawaʔna, Northern bawaʔla, bawaaʔla (with a suggested reading of bawalʔ-la) 'tongue'. This could be constructed of ba- 'call [and some other actions of the mouth]' plus 'flexible object lies', attested in Yahi as baʔla-. Compare also Yahi and Northern boʔla- 'handle a flexible object'; and bal- 'mouth' in Yahi and Central, 'cheek' in Central and Northern. Certain forms display a morphophonemic alternation of b- with -w-; hence bal-, in noninitial position, appears as Central -wal-, Yahi -wan-. 'Tail' is ṗulsu.

Shasta (S. Silver, p.c.): -ehen-a 'tongue'; -eheni 'lick'; -i·hiwa 'tail'.

Atsugewi (L. Talmy, p.c.): Except between phonemic slashes, underlying forms are given. apl̓, /ʔapl̓i/ 'tongue'; -ipl̓ 'place the tongue'; pla·t̓y 'lick'. The verb prefix is pri-, /pri-/ ~ /pli-/ 'ingressive mouth action (lick, suck, taste, swallow, etc.)'.

Achumawi (B. Nevin, p.c.): ʔipʰl̓í 'tongue'; -pʰl̓a- 'do with the tongue'. From Olmsted (1966) ăp 'mouth; ippĭ· 'tail'.

Karok (Wm. Bright 1957): ápri·h 'tongue'; párax 'lick (acorn soup) off cooking stones'; vírax 'lick'; vif̓ 'suck (on)'; apma·n 'mouth'; pa- 'by mouth'; ápvu·y 'tail'. Most of Karok forms are polymorphemic and will require analysis; the segments that seem most pertinent are p(a)r 'tongue, lick' and p(a) 'mouth'.

Washo (Wm. Jacobsen, p.c.): kMá·dud 'tongue'; m^{u} 'do in the mouth'; -alŋ 'lick'; and haŋa 'mouth' are aberrant from the forms in other languages. More pertinent could be ap̓il 'tail'.

* * * * * * * * * * * *

NOTES

1. The forms in Western Pomo were collected by me in the course of field work supported by the Survey of California Indian Languages (on Kashaya) and National Science Foundation grant GS-711 (on Southern, Central, and Northern Pomo). The Eastern Pomo material is from S. McLendon and the Southeastern from J. Moshinsky. The sources for other languages are cited in the text.

2. McLendon (1973:82) reconstructs 'mouth' as *ʔahx̣á, using *-hx̣- for the correspondences exemplified in the set for 'mouth' and *-h- for those cases in which all the languages have h from an intervocalic (ignoring length) *h. I reconstruct both sets of correspondences as *h and recognize a distinctive conditioning environment which obviates the need for a proto-phoneme *x̣. That environment consists of those situations in which the initial syllable of the proto-word is lost in Eastern and Southeastern. Most commonly that syllable is *ʔV- :

		x in Eastern	
*h	→	x̣ in Southeastern	/ʔV__V
		h in the other lgs.	

We also differ on the treatment of length and accent and on the symbolization of certain palatal-velar correspondences.

SWITCH-REFERENCE IN SERI[1]

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0. Introduction
1. /ta/ and /ma/ as subject-change markers
2. The verb be in the subordinate clause
3. The verb be in sentence-final position
4. Subject-change without markers
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0. Several recent papers[2] have presented data on switch-reference (subject-change markers) in certain of the Yuman languages. The first article dealing with the subject in general is Jacobsen's "Switch-Reference in Hokan-Coahuiltecan",[3] in which he reports the feature as present in Washo and Kashaya (Southwestern Pomo) but absent in certain other Hokan languages. Winter[4] states that "switch-reference signaled by -m must be reconstructed for Proto-Yuman." As for Proto-Hokan, he believes that we must admit to the possibility that an independent development of switch-reference occurred in various member languages. He considers the likelihood "utterly remote" that a Proto-Hokan switch-reference device might be posited and effectively reconstructed.

This paper presents the Seri system of subject-change (SC) markers, thereby providing evidence of switch-reference devices from still another Hokan language.

1. Seri sentences frequently consist of one or more subordinate clauses and a main clause. In such sentences, the lexical verbs of all the clauses are normally in the same tense, either past or future, not a combination of the two. Change of subject in consecutive clauses within a sentence is marked in the subordinate clauses, which normally precede the main clause. This signaling of subject change is redundant when the verbs are overtly marked for person and number. But when the subjects of successive clauses are all third person (unmarked in Seri) and of the same number, it is the switch-reference marker alone that signals a change of subject.

One way in which Seri differs from the other Hokan languages already described is the manner in which it signals switch-reference. In some of these languages, same subject (SS) is indicated by adding /-k/ to the verb in the subordinate clause. Different subject (DS) is indicated by /-m/.

In Seri, as in Washo, SS is unmarked. DS is signaled by either of two forms of the auxiliary /-a(a) be: /ta/ (subject change future (SCF)),[5] indicating a change of subjects between clauses pertaining to the future, or /ma/ (subject change past (SCP)), between clauses pertaining to the past or present. Each occurs as the final word of a

clause. In 1.1 these two SC indicators are illustrated in sentences with only one subordinate clause. The functions of /ta/ and /ma/ are described in detail in 1.2 and 1.3, respectively, and in 1.4 both are presented as they occur in expressions of time and space, number, location, and manner.

1.1 In (1) the subjects of both clauses are the same, and therefore no SC indicator occurs.[6]

(1) po-kóo / síi-škam-a?a (DF-[be all] / fut-[arrive pl]-TM) They being all, they will arrive, i.e., All of them will arrive.

In (2) the subjects are different, signaled by SCF indicator /ta/ in the first (subordinate) clause.

(2) po-kóo ta / in-síi-??iit-a?a (DF-[be all] SCF / [2 sub]-fut-eat-TM) They being all, you will eat them, i.e., You should eat them all.

The SCF indicator /ta/ co-occurs only with a verb marked by dependent future (DF) /po-/,[7] which indicates that the verb of the subordinate clause has a future meaning. The SCF /ta/ anticipates both that the verb of the following main clause is also future and that the main clause has a different subject.

In (3) both clauses have the same subject, and therefore no SC indicator occurs.

(3) t-kóo / y-áanniipXat (DP-[be all] / past-[go home pl]) They being all, they went home, i.e., They all went home.

In (4) the subjects are different, signaled by SCP indicator /ma/ in the subordinate clause.

(4) t-kóo ma / i-míi-tołka (DP-[be all] SCP / [3 obj]-perf-[eat pl]) It being all, they ate it, i.e., They ate all of it.

The SCP indicator /ma/ co-occurs only with a verb marked by dependent past (DP) /t-/, which indicates that the verb of the subordinate clause has a meaning of past. The SCP /ma/ anticipates both that the verb of the following main clause is also past or present and that the main clause

has a different subject.

1.2. In (2) the subordinate clause is marked for SC by the SCF /ta/, and the verb in the main clause is marked for future by /si-/. In (5) the subordinate clause is marked for SC by the SCF /ta/, and while the semantic category future is not overtly expressed by a future aspect marker, it is correctly realized in the main clause by /tm-/ (affirmative potential) prefixed to the verb. In other words, each dependent aspect prefix can correspond to more than one aspect in the main clause, as long as that aspect is not incompatible with the semantic category of the dependent prefix.

(5) im-póofp ta / tm-a-tíkpan ([2 sub]-DF-arrive SCF / [aff pot]-perf-ca-work) when you arrive, he can/may work.

In (6), since there is no change of subject in the three subordinate clauses, or between them and the main clause, no SC indicator occurs.

(6) tíix ?aa p-íix / ?a-yáa i-p-a-kóXł / šiXkám k? i-p-éeXXaałim / ?aa s-íix k-a-?a ([that one] there DF-sit / nom-own [3 obj]-DF-ca-keep / fish def [3 obj]-DF-[receive-rep] / there fut-sit nom-be-IM) when he is over there, when he tends store, when he receives fish, he'll be over there, i.e., He'll be staying there, tending the store and receiving fish.

Example (7) is a sentence containing four subordinate clauses and one main clause. The subject of the first clause is you, that of the second clause is I, and that of the remaining three clauses is foreigner. Each of the first two clauses is marked to indicate that the subject of the next clause is different.

(7) ?-a-p-áspox šo m-p-áai ta / i?-p-áaššii ta-X / kóksar š ?ákkiix mo-p-a-X / ?e-póo-fp-X / šíx š ?im-íssi-a?a (nom-ca-pass-mark a [2 sub]-DF-make SCF / [1 sub]-DF-carry SCF-cond / foreigner a somewhere toward-DF-move-cond / [1 ref]-DF-arrive-cond / thing a [1 obj]-[fut-

give -TM) When you make a paper, if I carry it, whenever a foreigner comes, when he comes to me, he'll give me something.

Note that in the second clause of (7), the SC indicator is suffixed by /-X/ (conditional). This is the only suffix which can occur with either the SC indicator or the other forms of the auxiliary be described in 2 below.

Examples (8) and (9) illustrate change of subject when the singular subject of a subordinate clause is included in the plural subject of the main clause. In spite of the partial identity of referents, the SC indicators are required in such cases. In (8) the you of the first clause is included in the we of the second clause.

(8) ko-m-p-áskin ta-X / Xáa ʔaa ʔa-síi-škam-aʔa ([3 ref]-[2 sub]-DF-paddle SCF-cond / soon there [1 sub pl]-fut-[arrive pl]-TM) If you paddle with it, soon we'll enter there.

In (9) the I of the first clause is included in the we of the second clause.

(9) Felípe k iʔaX ano ʔ-p-íix ta / taʔéwkW kix ko-nt-ʔá-ss-aat-aʔa (Felipe def side in [1 sub]-DF-sit SCF / Tiburon pos [3 ref]-forward-[1 sub pl]-fut-[move pl]-TM) When I am in Felipe's boat, we'll go to Tiburon.

1.3. In (10) the DP /t-/ marks the verb of the first clause as dependent past. The subjects of both clauses are the same, and therefore no SC indicator occurs.

(10) ʔái kop ʔapX t-áp-X / im-mátx (air pos outside DP-stand-cond / perf-hot) When the air comes out, it is hot.

In (11) and (12) the subjects are different, signaled by SCP indicator /ma/.

(11) t-ápka ma / iʔp-y-íim (DP-rain SCP / [1 sub]-past-sleep) When it rained, I slept.

(12) i-t-áʔt ma / m-óxxookam ([3 obj]-DP-[see pl] SCP /

perf-[flee pl]) when they saw them, they fled.

In (12) the semantic role of the SC indicator is evident. When they saw them, they fled is ambiguous in English. In Seri the occurrence of the SC indicator eliminates the ambiguity. It clearly indicates that when subject one saw subject two, subject two fled.

Example (13) contains four subordinate clauses with singular verbs unmarked for third person subject, and a main clause marked for first person plural subject. Change of subject is signaled in the first, second, and fourth clauses. In the first two instances, the SC indicator is the sole marker of the change; in the final clause, the change is also evident because of the subject prefix. The context from which (13) is taken makes it clear that the subject of the first, third and fourth clauses is horse, and the subject of the second clause is he (man).

(13) táaX iti t-áp ma / yáX kix an i-t-átni ma / i-k-áattaaX i-t-k^{w}áą / tá ?ak iti t-áp ma / k^{w}-?a-mí-Ɂkam (there on DP-stand SCP / belly pos in [3 obj]-DP-hit SCP / inf-nom-go [3 obj]-DP-[neg=know] / there spec in DP-stand SCP / [3 ref]-[1 sub pl]-perf-[arrive pl]) when it stood there, after he hit it in the belly, it could not move, it stood over in that place, we arrived to where it was.

1.4. Many Seri expressions that translate English adverbs are basically clauses that meet the requirements for SC. These include notions of time and space, number, location, and manner. Examples (14)-(20) all make use of the SC indicators:

(14) ?ánt po-fi ta / ?a-sí-ɬX-a?a (land DF-regain SCF / [1 sub pl]-fut-[go pl]-TM) when the land regains (the sun), we'll go, i.e., Tomorrow we'll go.

(15) po-?ámmook ta / píest ?ant s-m-íx k-ée-ya (DF-be night SCF / fiesta land fut-neg-sit nom-say-Q) When it is night, won't there be a fiesta?, i.e., Tonight won't there be a fiesta?

(16) po-yáam ta / i?p-s-óoss-a?a (DF-[be spacious] SCF / [1 sub]-fut-sing-TM) When it is spacious, I'll sing, i.e., Later I'll sing.

(17) iXáap t-ápXa ma / yóo-škam (days DP-three SCP / past-[arrive pl]) When there were three days, they arrived, i.e., They arrived three days ago.

(18) ?ákkii ?ak ano t-i? ma / in-t-á??o (someplace spec on DP-[be located] SCP / [2 sub]-inter-see) When it was someplace, did you see it?, i.e., Where did you see it?

(19) óX t-p-akta ma / ?ápX i-t-akmołka / i-y-óoktam (thus DP-pass-[look at] SCP / outside [3 obj]-DP-[take out pl] / [3 obj]- past-[look at pl]) When it was thus looked at, they took them out, they looked at them, i.e., Then they took them out and looked at them.

(20) šó t-p-akta ma / in-t-óo??a (what DP-pass-[look at] SCP / [2 sub]-inter-cry) What it was looked at, are you crying, i.e., Why are you crying?

One common time expression in which no SC indicator occurs is the term for yesterday.

(21) moXímmaa šo ?-yóo-??o (yesterday one [1 sub]-past-see) I saw one yesterday.

/moXímma/ yesterday is a particle, not a verb. At first glance it might appear to be a variation of the verb /-óoXXi/ die/finish, followed by SC indicator /ma/, i.e., /*m-óoXXii ma/ (perf-die SCP). But SC indicator /ma/ co-occurs only with the /t-/ (dependent past), never with /mi-/ (perfect). Compare the following (22)-(25) containing the verb /-óoXXi/.

(22) t-óoXXii ma / ?ímmoo ?a-y-áałaxk (DP-die SCP / far [1 sub pl]-past-throw) When it died, we threw it away.

(23) t-óoXX1 / i?méemt (DP-die / [perf-stink]) When it died, it stank.

(24) m-óoXX1 (perf-die) It is dead/finished.

(25) m-óoXX1 // táaX ma-t-koŋ-kéept (perf-die // that [2 sub pl]-inter-neg-[like pl]) It's dead. Don't you like that?

Example (22) contains a subordinate clause that is marked by SCP /ma/, indicating a change of subject in the following clause. Example (23) contains the same clause without the SCP indicator, because the next clause has the same subject. Example (24) is a one-clause independent sentence in which the verb /-óoXX1/ occurs with the perfect tense marker /mi-/. Example (25) contains two independent clauses. It is possible that historically yesterday was a a verb meaning when it was finished or after it finished.

2. The auxiliary verb /-a(a)/ be frequently occurs as a second verb in a clause. It is marked for tense-aspect but not for number.

In the subordinate clause in (26), the combination of the lexical verb marked by /si-/ (future) and the verb be marked by DF /po-/ translates if it will be .... The subjects are the same in both clauses and therefore no SC indicator occurs.

(26) ɬíX k? in-sí-??iit p-a-X[8] / in-s-onéaaX-a?a (thing def [2 sub]-fut-eat DF-be-cond / [2 sub]-fut-[wash hands]-TM) If it will be that you will eat a thing, wash your hands, i.e., If you are going to eat something, wash your hands.

When a change of subject is marked in a clause containing both a lexical verb and the verb be, this subject change is triggered by the subject of the lexical verb, but the verb be takes the dependent tense marker. The SC indicator always follows be.

In (27) the subjects are different, signaled by the SC indicator /ta/ following the DF-marked verb be.

(27) ɬíX k? in-sí-??iit p-a ta-X / ma-?-s-íiX-a?a (thing def [2 sub]-fut-eat DF-be SCF-cond / [2 obj]-[1 sub]-fut-leave-TM) If it will be that you will eat a thing,

I will leave you, i.e., If you are going to eat something, I'll leave.

In (28) and (29) the verb be occurs as the only verb in the subordinate clause. In both examples, the be is followed by the SC indicator.

(28) míšx p-a ta / ʔe-sí-mX-aʔa (well DF-be SCF / [1 ref]-fut-tell-TM) It being well, he will tell me, i.e., He will tell me correctly.

(29) míšx t-a ma / ʔe-yo-m-ámX (well DP-be SCP / [1 ref]-past-neg tell) It being well, he didn't tell me, i.e., He didn't tell me correctly.

In the subordinate clauses in (30) and (31), the combination of the lexical verb marked by /si-/ (future) and the verb be marked by DP /t-/ translates when ... was going to .... The subjects are the same in both clauses and therefore no SC indicator occurs.

(30) ktám kiʔ kanóaa kom ano s-íix t-a / i-t-yáai / ʔánt y-a-ʔ-xíit (man def boat pos in fut-sit DP-be / [3 obj]-DP-[go to] / land past-ca-pass-fall) When the man was going to get in the boat, when he went to it, he fell.

(31) s-óoʔʔiit-in t-a / i-yóo-ʔʔo (fut-eat-rep DP-be / [3 obj]-past-see) when he was going to eat, he saw it.

In (32) and (33) the subject change is signaled by the SCP /ma/ following the DP-marked verb be.

(32) s-óoʔʔiit-in t-a ma / ktám iʔmáa kiʔ yóo-fp (fut-eat-rep DP-be SCP / man other def past-arrive) When he was going to eat, the other man arrived.

(33) s-m-áttaaX t-a ma / iʔ-yóo-mm-e (fut-neg-go DP-be SCP / [1 sub]-past-neg-give) When he wasn't going to go, I didn't give to him.

3. The subordinate clauses described so far have preceded the main clauses. These consecutive clauses are frequently temporal in meaning, one event closely following the other or associated with the other in time.

Without any change in meaning, a subordinate clause containing a verb marked by DF /po-/ may also follow the main clause. The order of the clauses in (16) is reversed in (34); the subordinate clause is now sentence final. The occurrence of /ta/ in sentence-final position following the DF-marked verb identifies it as an SC. Examples (16) and (34) have essentially the same meaning.

(34) i?p-s-óoss-a?a / po-yáam ta ([1 sub]-fut-sing-TM / DF-[be spacious] SCF) I'll sing, when it is spacious, i.e., I'll sing later.

There is a change of meaning when a subordinate clause that contains a lexical verb marked by /si-/ (future) and the verb be marked by DP /t-/ occurs following the main clause, rather than preceding it, as do the subordinate clauses in (30)-(33). When such a marked clause occurs sentence final, it expresses purpose or motivation and is not a sequence of past events; the action may yet be unrealized. Examples (35) and (36) contain subordinate clauses of purpose or motivation. There is no SC indicator.

(35) yóo-fp / s-óo??iit-in t-a (past-arrive / fut-eat-rep DP-be) He arrived, it was that he will eat, i.e., He arrived to eat.

(36) me-?p-mí-fp / ?-a-p-á??aa k-ís pak i?-s-éeXɬ t-a ([2 ref]-[1 sub]-perf-arrive / nom-ca-pass-grind nom-raw some [1 sub]-fut-take DP-be) I arrived to you, it was I will take some flour, i.e., I came to you to get some flour.

The verb be marked by /mi-/ (perfect) occurs sentence final following a subordinate clause of purpose, whether or not there is a change of subject. In (37) and (38) there is a change of subjects in the final, subordinate clauses of purpose. In (39) and (40) the subjects are the same in both clauses. Each of these four sentences ends with /m-a/ (perf-be). The function of /m-a/ in these examples is problematic. It is conceivable that at some point in the history of Seri, /ma/ functioned as a subject-change marker in sentence-final subordinate clauses, but examples (39) and (40) below provide

counterexamples to this hypothesis for a synchronic analysis of Seri.

(37) Xíkkaa ʔ-a-p-ámyaŋ kiʔ táššoo ʔíi-mm-e / i-síi-m t-a m-a (things nom-ca-pass-[swallow pl] def one [1 sub]-perf-give / [3 obj]-fut-swallow DP-be perf-be) I gave her a pill, it is that she was going to swallow it, i.e., I gave her a pill to swallow.

(38) šiXkóm kom i-míi-Xkim / ʔáXš kop i-síi-ʔʔiit t-a m-a (fish pos [3 obj]-perf-throw / dog pos [3 obj]-fut-eat DP-be perf-be) He threw the fish, it is that the dog was going to eat it, i.e., He threw the fish to the dog to eat.

(39) móoffii kiʔ kíkkoot míi-p / kíkkoot i-s-áai-tin t-a m-a (Móoffi def [with them] perf-stand / [with them] [3 obj]-fut-do-rep DP-be perf-be) Móoffi was with them, it is that she was going to help them, i.e., Móoffi was with them to help them.

(40) ʁʷɛ́ɛ́kkoox Antóonio k ʔa-t-ošíit / ʔa-s-óoktan t-a m-a ([old man] Antonio def [1 sub pl]-DP-[go to pl] / [1 sub pl]-fut-[look pl] DP-be perf-be) We went to Old Man Antonio, it is that we were going to look at him, i.e., We went to visit Old Man Antonio.

Note that in (40) both clauses are subordinate, with both the lexical verb in the first clause and the verb be in the second clause marked by the DP /t-/.

Although a description of the other functions of be lies outside the scope of this paper, several more examples of be in sentence-final position follow for comparison purposes.

(41) ʔaX k-isiɬ-áa ʔaX t-aʔíi / ʔaX m-áa (just nom-little-really just DP-feel / just perf-be) It is just that it

seems so really little.

(42) ʔáX ɬ im-ássiox-iʔsa / y-s-X (water any [neg nom]-[drink pl]-TM / past-be-cond) It was because they didn't drink any water.

(43) ɬíX ɬo ʔ-im-íiXXiim-iʔaa / y-a-X (thing a 1-neg-fear-TM / past-be-cond) It was because I wasn't afraid of anything.

(44) im-p-iʔáa / ʔaX yó-mm-a ([2 sub]-DF-fast / just past-neg-be) It is just not that you would be so fast, i.e., You just don't go fast.

4. Clauses with nominalized verbs contain no SC indicator when followed by a clause with a different subject. In (45) there is no subject in the subordinate clause, so an SC is not anticipated. In (46) and (47) there is a subject change, but even though the nominalized verbs contain person markers, no SC indicators occur.

(45) m-im-óos i-s-a-X / mo-n-s-íin-aʔa (2-neg-sing inf-fut-be-cond / toward-[2 sub]-fut-move-TM) If it is to be your-not-singing, come back, i.e., Even if you don't sing, come back.

(46) m-im-óos i-s-a-X / Xíkkaa k-óoppooł me-ʔ-s-á-ass-aʔa (2-neg-sing inf-fut-be-cond / things nom-black [2 ref]-[1 sub]-fut-ca-drink-TM) If it is to be your-not-singing, I'll give you black things to drink, i.e., Even if you don't sing, I'll give you coffee to drink.

(47) i-táppooɬkim i-s-a-X / ʔe-k-ámxk (3-broken inf-fut-be-cond / [1 ref]-imp-bring) If it is to be its-being-broken, bring it to me, i.e., Even if it is broken, bring it to me.

Contrary-to-fact sentences, which contain the contrary-

to-fact particle /pikiX/, are not marked for SC when the main clause has a different subject. Sentences (48) and (49) are examples of such sentences.

(48) m-im-mokéeppee pikiX / ʔa-sí-ɬX-aʔa (2-neg-sick [cont fact] / [1 sub pl]-fut-go-TM) If your-not-sick, we will go, i.e., If you had not been sick, we would have gone.

(49) i-k-a-tíkpan šo ʔ-a-p-áʔʔoo pikiX / iʔp-s-a-tíkpan-aʔa (inf-nom-ca-work a nom-ca-pass-see [cont fact] / [1 sub]-fut-ca-work-TM) If to be a worker were seen, I will work, i.e., If there were work to do, I'd work.

Clauses joined with the coordinate conjunction /Xo/ but do not occur with the SC indicator. These are independent clauses and each can stand alone without the connecting /Xo/. Since SC is not used in these sentences, it is seen that SC is a feature of subordination and not of coordination.

(50) pak ʔáXXoox im-áškam-iʔa Xo pak ʔáXXoox k-áškam-iʔa (some shore [neg-nom]-[enter pl]-TM but some shore nom-[enter pl]-TM) Some don't arrive at shore but others do arrive at shore.

(51) yóo-fp Xo ʔ-yo-m-áʔʔo (past-arrive but [1 sub]-past-neg-see) He arrived, but I didn't see him.

5. In summary, subject change in Seri between subordinate clauses or between subordinate and main clauses is signaled in the subordinate clause by a combination of two factors. The first is the occurrence of one of two tense markers (DF /po-/ or DP /t-/) either on the lexical verb when it is the only verb of the clause, or on the auxiliary verb be following the lexical verb. The second is the occurrence of the appropriate form of the verb be as SC indicator (/ta/ (subject change future) or /ma/ (subject change past)).

FOOTNOTES

[1]Seri is a Hokan language spoken by some 440 people living along the coast of Sonora, Mexico in two main villages, Punta Chueca and El Desemboque, and in a number of seasonal camps. This paper is based on language data collected during the past two decades under the auspices of the Summer Institute of Linguistics. A revision of an earlier draft of this paper was done at a workshop of the Summer Institute of Linguistics at the Centro de estudios Jaime Torres Bodet in Mitla, Oaxaca, Mexico in September 1975. I am deeply grateful to my many Seri tutors, and especially to my principal language assistants Roberto Herrera T., Oscar Romero, Lorenzo Thompson, and María Thompson. I am indebted to Viola G. Waterhouse, Barbara E. Hollenbach, Donald C. Frantz, and Edward W. Moser of the Summer Institute of Linguistics, for their valuable comments and suggestions. A concordance of Seri texts, produced at the University of Oklahoma under National Science Foundation Grant GS-1605, Project for Computer Support of Linguistic Fieldwork, proved useful in the analysis. For a description of Seri phonemes see Edward W. Moser and Mary B. Moser, "Consonant Vowel Balance in Seri (Hokan) Syllables." Linguistics (1965): 40-67.

[2]James M. Crawford, "The Cocopa Language" (unpublished Ph.D. diss., University of California, Berkeley, 1966); William H. Jacobsen, "Switch-Reference in Hokan-Coahuiltecan," in Studies in Southwestern Ethnolinguistics, ed. D. Hymes and W. Bittle [The Hague: Mouton, 1967]; Margaret Langdon, A Grammar of Diegueño: The Mesa Grande Dialect, UCPL, no. 66 [Berkeley and Los Angeles: University of California Press, 1970]; Judith Joël, "The -K and -M Suffixes in Paipai," paper presented at the 73rd annual meeting of the American Anthropological Association, Mexico City, 1974; Pamela Munro, "Topics in Mojave Syntax" (unpublished Ph.D. diss., University of California, San Diego, 1974); Martha B. Kendall, "The /-k/, /-m/ Problem in Yavapai Syntax," IJAL 41 (1975): 1-9; Werner Winter, "Switch-reference in Yuman Languages," in Hokan Studies, ed. M. Langdon and S. Silver, Janua Linguarum, Series Practica, no. 181 (The Hague, in press).

[3]Jacobsen, pp. 238-263.

[4]Winter, op. cit.

[5]For this paper, the subject-change auxiliaries are written /ta/ and /ma/ instead of /t-a/ (dependent past -be) and /m-a/ (perfect-be) because synchronically they act as units. It is inviting to speculate why auxiliary verbs meaning 'when it is' and 'it has been, it is,' developed into subject-change future and subject-change past markers, respectively. Presumably at some point in the history of

Seri they were productive. Perhaps they were once used only in sentences in which the relationship between the subordinate clause and the main clause was strictly temporal, but now their use has broadened to sentences in which other relations hold (see examples (2) and (4)).

[6]Square brackets are used to enclose a gloss containing more than one word. = joins a gloss of more than one word when the Seri form is complex. / marks division between clauses. // marks division between sentences. Hyphens mark morpheme boundaries. The following abbreviations are used: aff pot = affirmative potential, ca = causative, cond = conditional, cont fact = contrary to fact, def = definite article, DF = dependent future, DP = dependent past, DS = different subject, fut = future, imp = imperative, inf = infinitive, inter = interrogative, intr = intransitive, loc = locative, neg = negative, nom = nominalizer, obj = object, pass = passive, perf = perfect, pl = plural, pos = positional article, Q = question, ref = referent, rep = repetitive, SC = subject-change, SCF = subject-change future, SCP = subject-change past, spec = specific article, SS = same subject, sub = subject, TM = tense-mode.

[7]For convenience, these prefixes are hereafter cited in the text in their underlying form, but in examples are given in the actual surface forms.

[8]/p-a-X/ has an idiolectal variant /p-i-X/.

[9]/pikiX/ has an idiolectal variant /pakiX/.

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